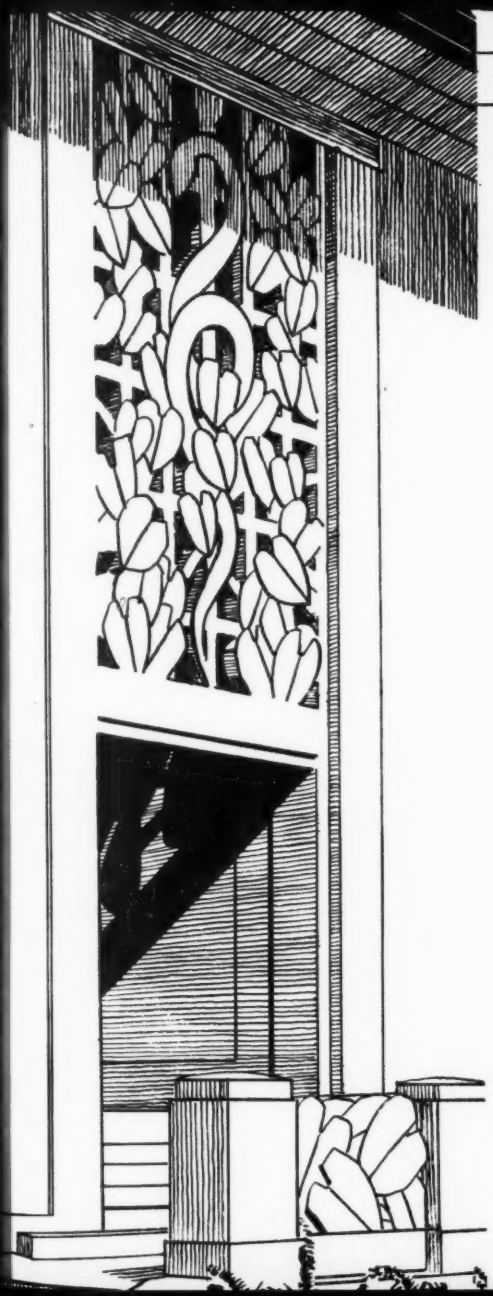
HAWAII MEDICAL JOURNAL



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Medical Library

EARLY DIAGNOSIS OF LEPROSY

NORMAN R. SLOAN, M. D.

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NOVOCAINE INJECTION FOR LOW BACK STRAIN

CAPT. WILLIAM L. ARGO, M. C., A. A. F.

•

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1. MARSHALL, S. F., and DEVINE, J. W., Jr.: Gastrojejunal Ulcer, S. Clin. North America, 743-761 (June) 1941.

2. FAULEY, G. B.; FREEMAN, S.; IVY, A. C.; ATKINSON, A. J., and WIGODSKY, H. S.: Aluminum Phosphate in the Therapy of Peptic Ulcer, Arch. Int. Med. 67: 563-578 (March) 1941.

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FIGHT INFANTILE PARALYSIS · JANUARY 14 TO 30

Early Diagnosis of Leprosy

As Seen in Hawaii

Norman R. Sloan, M.D.*

Kalaupapa, Molokai

Compulsory segregation of lepers *is* effective. Hawaii offers excellent evidence of this: known active lepers in 1890 (the peak year), 1175; June 30, 1943, 390.

It is true that other factors may be involved to some extent; but few would question the importance of diagnosing and isolating all cases of leprosy as early in the course of the disease as possible. Especially is this true of the more contagious lepromatous form. Early diagnosis is the task of the general-practitioner who first sees the patient, who often has not had extensive experience with leprosy and must depend on his theoretical knowledge. Since I have found no satisfactory textbook description, I offer for him this presentation of early leprosy as seen in Hawaii: its incidence and presenting symptoms, and the technic of diagnosis.

Such a presentation to be useful must be brief, and therefore somewhat dogmatic. It is based largely on personal experience and the records of Kalaupapa Settlement (the territorial leprosarium on the island of Molokai), and should enable the physician to locate early cases of leprosy and make at least a tentative diagnosis.

Contagion

Leprosy has the longest incubation period and the most chronic course of any known infectious disease of man. The exact incubation time can seldom be determined with accuracy, but in most cases is probably between three and ten years. The majority of patients give a history of near relationship with active lepers, or prolonged and intimate contact, or both. Mycobacterium leprae, the "Hansen bacillus", is generally accepted as the causative agent, although Koch's postulates have not been fulfilled. A patient in whom this bacillus can be demonstrated is considered an "open case", and as such a definite menace to public health.

It is believed that hereditary transmission does not occur, but probably susceptibility can be and is inherited. Theoretically, a child of leprous parents removed at birth should be non-leprous. Actually, we cannot control the environment in which that child is reared, and a large proportion of admissions to Kalaupapa are of leprous parentage. (For example, 17 of 48 patients now living between the ages of 9 and 18, had one or both parents leprous.)

* Dr. Edward S. Fish collected statistical material.

Evidently some immunity factor exists of which we know nothing. Why, for example, do we fiind 4 leprous children scattered through a family of 11, with neither parent leprous; while a leprous couple have 9 children, all born in the settlement, of whom only 2 are lepers? Why is it as yet impossible to cultivate the Hansen bacillus on artificial media, or to produce a systemic disease in lower animals? Why have all attempts at deliberate inoculation of human beings failed, except two, one of which is doubtful? Leprosy is a fruitful field for clinical and laboratory research.

Race

Table 1 brings out strikingly the preponderance of

Table 1. *Leprosy and Race.*

	PATIENTS AT KALAUPAPA SEPT. 20, 1943				
	NUMBER	ADMISSIONS 1919–1938 PER CENT	NUMBER	PER CENT	RACIAL INCIDENCE*
Hawaiian	466	39.7	137	34.8	6.47
Part-Hawaiian	258	21.9	105	26.7	2.46
(Hawaiian and Part-Hawaiian)	(724)	(61.6)	(242)	(61.5)	(3.79)
Japanese	150	12.7	39	9.9	0.25
Filipino	130	11.1	39	9.9	0.74
Portuguese	69	5.9	39	9.9	1.27
Other Caucasian	23	1.9	6	1.5	0.09
Chinese	39	3.3	17	4.3	0.59
Korean	28	2.4	8	2.0	1.19
Puerto Rican	10	0.8	4	1.0	0.51
Others	3	0.3	....	....	
	1176	100.0	394	100.0	

* Patients at Kalaupapa per 1000 of this racial group in the territory, based on 1939 population estimate (the last year in which "Portuguese" were separately listed).

Hawaiian and part-Hawaiian groups in the population of Kalaupapa. The low incidence among Japanese is also noteworthy. However, no race is exempt, and no suspect may be eliminated on the basis of race alone.

There are no recorded cases of negro lepers in Hawaii, but one should be on the lookout for suspects in this group, especially if they have lived in the West Indies, Africa, or the Gulf Coast of the United States.

Sex

In Hawaii, male lepers outnumber females about three to two.

AGE

Figure 1 shows, in five-year groups, the age at

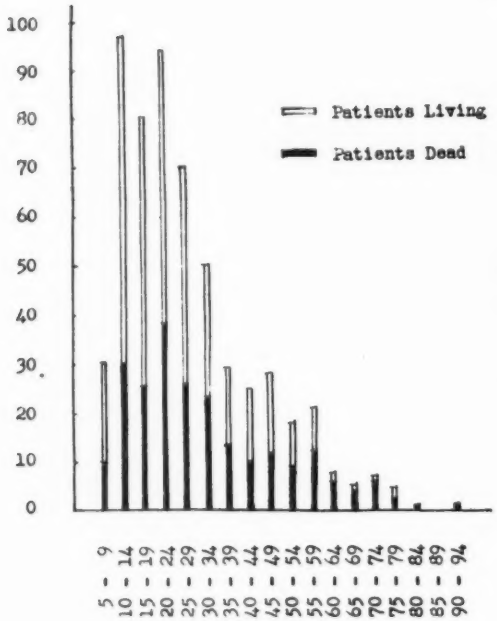

Fig. 1. Age at Admission of 568 Patients.

admission of a group of 568 patients, of whom 330 are living. All patients were included on whom reasonably reliable records were available. The youngest was five years old; the oldest, ninety-one. Cases have been reported in children of fifteen and nineteen months, from the Philippines[1] and Hawaii[2] respectively. It will be seen that while no age, except earliest infancy, is exempt, leprosy is primarily a disease of later childhood, adolescence, and early adult life. Since it is probable that prompt diagnosis would have lowered the average age by as much as two years, the highest incidence might reasonably be expected in the school-age group and through adolescence. Allowing for the incubation period, it is evident that most cases are contracted in infancy and childhood.

LIVING CONDITIONS

As one would naturally expect, people with poor standards of nutritio nand cleanliness appear more susceptible to invasion by the Hansen bacillus. The ardently championed theory of the common poi bowl as a major factor in transmission is suggestive, but not proved. To paraphrase the saying of medical school days, "Respectability is no barrier to the entrance of Hansen bacilli." King and commoner, plutocrat and beggar, all have harbored the invader.

OCCUPATION

No relationship is found between occupation as such and susceptibility. Table 2 summarizes the available information. No doubt many, if not most, of those in the "None" or "Not Stated" groups should

TABLE 2. *Occupational Classification of 595 Patients at Time of Admission.*

Laborer	203
Student	150
Housewife	52
Farmer	20
Clerk	13
Chauffeur or Truck Driver	10
Cowboy	10
Domestic	9
Carpenter	8
Fisherman	7
Sailor	7
Stevedore	6
Foreman; Mechanic (5 each)	10
C.C.C.; Construction Work; Inmate, Boys' Industrial School; Janitor; Laundry Worker; Painter; Teacher (4 each)	28
Fireman; Longshoreman; Machinist (3 each)	9
Blacksmith; Bookkeeper; Brakeman; Engineer; Office Boy; Pipe-Fitter; Printer; Prisoner; Soldier; Stable Boy; Telephone Operator; Tug Captain (2 each)	24
Bricklayer; Bootblack; Candy Maker; Caretaker; Cook; Dairyman; Electrician; "Factory Owner"; "Factory Worker"; Forest Ranger; Gardener; Hat Maker; Housekeeper; Inmates of Institutions (Aged, Girls Industrial School, Mental); Job Repairman; Lei Seller; Mason; Pin Boy; Plumber; Priest; "Railroad Worker"; Service Station Operator; Shoemaker; Teamster; Watchman; Welder; Woodcutter (1 each)	29
	595
"None"	131
Not stated	322
	1048

be listed in the first three classes. It is intriguing to find a woman with four small children listed as "Occupation—None"!

PRESENTING SYMPTOMS

Records of approximately 1,000 patients were examined, and on 743 the presenting symptom—which in most cases is the complaint which took the patient to the doctor—was noted. Results are tabulated in Table 3. A few items call for comment:

TABLE 3. *Presenting Symptoms.*

	CASES
Macules ("spots", "blotches")	344
Nodules ("lumps", "boils")	97
Anesthesia ("numbness", burns)	64
Ulcers	63
Swelling of skin (including hands)	44
Muscle weakness (eyelids, face, hands, feet)	31
Contracture of fingers	28
Erythema	17
Swelling of foot or leg	14
Atrophy of digits	9
"Ringworm" (so diagnosed by physicians)	6
Obstruction to breathing	6
Itching	6
Blisters, becoming ulcerated	3
Painful hands	2
Shrivelled or wrinkled skin	2
Wrist or foot drop	2
Sore arm	1
Painful ulnar nerve	1
Difficulty in swallowing	1
Swelling of ears	1
"Sore eyes and ears"	1
	743
Incomplete records (approximate)	257
	1000

Almost half of these patients first noted some type of pigmentary skin disturbance. It appears that the "blotch" was usually hypopigmented, but often it was hyperpigmented or red (hyperemic). The importance of examining all such cases for leprosy is obvious.

Anesthesia is often first noted by the patient's burning himself because he is not conscious of the presence of the hot object. The burn may or may not be painful, depending on the degree of anesthesia present (Physical Examination, *item 5*).

It is striking that a relatively late lesion, such as laryngeal obstruction, should be a presenting symptom. By the time this occurs, we expect many other lepromatous lesions.

Although it is not included in our statistics, local physicians report that urticaria is a common presenting symptom.

In my experience, itching is not to be expected in uncomplicated leprosy, but it is possible that it may be included among the paresthesias said to be present in very early cases.

PHYSICAL EXAMINATION

Figure 2 gives in brief outline the generally accepted classification of leprosy as adopted by the International Congress of Leprosy held in Cairo, Egypt, in 1938.[3] Attention is called to the abbreviations, which are frequently used in the literature.

Fig. 2. Classification of Leprosy[3].

1. Lepromatous (L)
   Lesions principally in skin and mucous membranes
   Lepra bacilli abundant
   Prognosis unfavorable
2. Neural (N)
   Lesions primarily in nerve trunks
   Lepra bacilli scanty or absent
   Prognosis relatively favorable
   Subtypes:
   Anesthetic (Na)—Polyneuritic changes
   Altered peripheral sensation
   Contractures
   "Trophic" disturbances: bone absorption, ulceration
   Muscular atrophies and paralyses
   Simple macular (Ns)
   Non-granulomatous macules, flat or slightly elevated, smooth
   Tuberculoid (Nt)
   Granulomatous "macules," typical histologic appearance
3. Mixed (LN)

As shown in Table 4, compiled from all avail-

TABLE 4. *Conditions Sometimes Confused with Leprosy.*

DERMATOLOGIC CONDITIONS	NEUROLOGIC CONDITIONS	MUCOUS MEMBRANE CONDITIONS
Conditions of Common Occurrence or Readily Confused		
Syphilis	Syphilis (including "mal perforans")	Syphilis
Acne indurata	Burn scars	Glossitis
Cellulitis	Nerve injuries	Rhinitis
Dermatitis medicamentosa		Tuberculosis
Dermatophytosis ("ringworm")		
Erysipelas		
Seborrheic dermatitis		
Sebaceous cysts		
Tinea (pityriasis) versicolor		
Urticaria		
Vitiligo (leucoderma)		
Xanthoma		
Conditions of Less Common or Rare Occurrence		
Adenoma sebaceum	Amyotrophic lateral sclerosis	
Blastomycosis	Beriberi	
"Eczema"	Cervical rib	
Erysipeloid (Rosenbach)	Diphtheritic neuritis	
*Erythema multiforme	Hypertrophic interstitial neuritis	
*Erythema nodosum	Intercostal neuralgia	
Fibroma or neurofibroma	(including herpes zoster)	
Filariasis	Lead poisoning	
Granuloma annulare	Neuritis of lateral femoral nerve	
Granuloma (mycosis) fungoides	("meralgia paresthetica")	
Industrial dermatitis	Raynaud's disease	
Lichen planus	Septic neuritis	
Lupus erythematosus	Simple peripheral neuritis	
Molluscum contagiosum	Spinal meningoradiculitis chronic)	
Morphea	Syringomyelia	
Psoriasis	Tumors of spinal cord	
*Sarcoid (especially Boeck's)		
Sarcoma cutis		
Scleroderma		
Sporotrichosis		
Tuberculosis cutis (including lupus vulgaris)		
Conditions Not Known to Occur in Hawaii		
Leishmaniasis (American leishmaniasis and oriental sore)		
Pellagra		
Pinta		
Yaws and Gangosa		

* These are clinical, not etiologic, entities. They may be caused by tuberculosis, syphilis, other infections, or *leprosy*.

able sources, the conditions which may be confused with leprosy are numerous. The more important differential points will be discussed later.

Points to Bear in Mind:

(1) In lepromas, bacilli *must* be found. In tuberculoid "macules", a few bacilli may be found; more often in tuberculoid reaction.

(2) Thermal anesthesia is present in practically all cases.

(3) Anesthesia *or* M. leprae must be demonstrated to diagnose leprosy.

(4) Regarding neural cases in general: leprous symptoms are due to peripheral nerve lesions, those of most other major neurologic conditions (especially syphilis) to lesions of the central nervous system. This does not, of course, apply to the various forms of neuritis.

(5) Uncomplicated leprosy often gives rise to positive Wassermann and Kahn reactions. There is no known serologic test which will differentiate leprosy from syphilis.

(6) If there are reasons for suspicion, but a definite diagnosis cannot be made at once, the patient should be followed at intervals of three to four weeks, with repetition of bacteriolofic examination if indicated, unless sooner confined for observation as a suspect.

Figure 3 is an outline for physical examination of suspects, a modification of the one used at the National Leprosarium at Carville, Louisiana. The use of this will be discussed in detail. If it is carefully followed, few if any definite cases of leprosy will be missed. For convenience, I use a copy on a small card as a check in routine examination.

The entire skin surface, including the soles, should be examined in good indirect daylight. Male patients should be naked. Women may be permitted a two-piece undergarment (shorts and brassiere) or similar arrangement, which can be moved as needed.

Fig. 3. General Outline for Examination.

GENERAL

1. General health	8. Thickening of nerves
2. Nodules	9. Paralyses
3. Macules	10. Loss of hair
4. Diffuse thickenings	11. Loss of perspiration
5. Anesthesia	12. Contractions
6. Ulcerations	13. Other deformities
7. Muscular atrophy	

LOCAL

14. Eyes	19. Hands
15. Ears	20. Feet
16. Nose	21. Genitalia
17. Mouth and throat	22. Internal organs
18. Lymph nodes	

LABORATORY

23. Bacteriologic examination	24. Biopsy

GENERAL EXAMINATION

(1) General Health.—It has been stated that the onset of leprosy is frequently accompanied by fever. (For example, see the definition of "Leprosy" in the American Illustrated Medical Dictionary.) In Hawaii such a case is worth reporting. Usually the onset is insidious, but the patient may present himself in a state of "lepra reaction", in which the temperature sometimes reaches 105 F. (40.5 C.), the patient is acutely ill, and skin lesions tend to exacerbate. Discovering a case of leprosy in this condition is not early diagnosis.

(2) Nodules (L)—A "nodule", in the leprologic sense, is a nodular lesion or plaque of skin or mucous membrane, histologically a leproma, containing abundant Hansen bacilli. It is to be distinguished from the elevated tuberculoid lesion, which will be discussed under *(3) "Macules"*.

Early "nodules" are single or multiple. They vary from pinhead size to a centimeter or more. They are usually intradermal rather than subcutaneous, but are well raised above the surrounding skin. The favorite sites are ears, alae nasi, cheeks, and forehead, but they may occur anywhere. However, it is unusual to find them below the chin until the disease is well advanced. They are usually of moderately firm consistency, but sometimes are almost stony hard. Bacteriologic examination is always positive (for technic see item [23] *Bacteriology.*)

During "lepra reaction" some patients develop crops of transitory nodules which appear to be due to bacterial embolism. This condition has been called "erythema nodosum leprosum". The nodes rise gently from the surrounding skin, may be extremely tender to touch, are bright red at first, later fading, and are unusually rich in bacilli. In some patients they have a tendency to ulcerate, and bacilli are easily obtained from the ulcers.

Bullous lesions, later ulcerating, have been reported, and are included in the records, but I have not seen them. In this type the fluid should contain lepra bacilli; but bullae may also be associated with neural leprosy, and may even be the first symptom. Such cases are rare in Hawaii.

Differential:

1. Nodular syphilids occasionally resemble leprosy; are easily differentiated by bacteriologic examination.

2. Neurofibromatosis may present a superficial resemblance; in the West Indies one patient with this disease was brought to me three times as a leprosy suspect. The lesions are generally pedunculated, and do not contain acid-fast bacilli.

(3) Macules (Ns, Nt).—A "macule", in the leprologic sense, is a circumscribed skin area in which the pigmentation differs from normal, sometimes elevated above the surrounding skin in part or in whole. The term "leprid" is used as a synonym.

"Macules" may be of any size or shape, and may occur anywhere on the skin surface of the body except, perhaps, the hands and feet. The borders vary from sharply defined ridges to gradual fading into normal tissue. They are usually hypopigmented (pigment is never completely lacking), but may show increased pigmentation. They may or may not show anesthesia.

Leprids are of two types: Simple *(Ns)* and tuberculoid *(Nt)*. These differ clinically and histological-

ly, but are not always clearly differentiated. Both types at times tend to spread peripherally, leaving an atrophic, hypopigmented center, and it is this which has caused the frequent diagnosis of "ringworm". Tuberculoid lesions are clinically more active, being raised, somewhat indurated, and usually, in light skins, of a red color which may become a deep scarlet. Thermal anesthesia *(item 5)* is generally, but not invariably, present in the atrophic center, and sometimes in the border.

A type known as "major tuberculoid" may at times be actually nodular. It is distinguished clinically from the lepromatous nodule by its smooth surface, usually deep red color, and scanty bacilli, if any.

"Tuberculoid reaction" is a special type of lepra reaction, in which tuberculoid lesions become more prominent and may closely simulate active "nodules". Constitutional disturbance is absent or slight. Bacilli are frequently but not invariably present, but not nearly so abundantly as in lepromatous nodules. This type of reaction tends to subside slowly over a period of weeks or months. Failure to recognize the condition has led to many glowing reports of therapeutic successes. In case of doubt, histologic study is of value.

Differential:

1. Tinea (pityriasis) versicolor does not really look like leprosy, but may be confusing, especially since the two conditions frequently coexist. Tinea versicolor shows hypopigmented patches, with a fine scaly surface; the scales may be scraped off and the causative organism (Malassezia [Microsporon] furfur) demonstrated. The patches are not anesthetic. Leprous macules are not scaly, and may or may not show thermal anesthesia, but anesthesia is usually demonstrable elsewhere.

2. Ringworm of various sorts with circinate lesions may closely simulate leprosy, but leprids of this type almost always show thermal anesthesia, frequently delimited sharply at the borders. Failure of any circinate "ringworm" to improve under treatment should lead to suspicion of leprosy—if suspicion has waited that long.

3. Vitiligo produces sharply demarcated areas of practically complete depigmentation, which are not anesthetic. This condition and leprosy frequently coexist in negroes, though this is less commonly found in Hawaii.

4. Many writers mention Boeck's sarcoid, said to be at times identical histologically and clinically with tuberculoid leprosy. Possible points of differentiation are involvement of nerve trunks, presence of anesthesia (by no means constant), and occasional presence of bacilli in small numbers in leprosy. Boeck's sarcoid is rarely diagnosed in regions where leprosy is endemic. I have not seen it in Hawaii.

5. Tuberculosis cutis may resemble leprids and may present scanty acid-fast bacilli. Look for apple-jelly nodules; test for anesthesia; and remember leprosy is more common in Hawaii. Dermatologic consultation may be required.

6. Numerous other skin conditions may closely simulate leprosy; at times consultation with a dermatologist is necessary. The presence of thermal anesthesia, on repeated examination if necessary, will clinch the diagnosis.

(4) Diffuse Thickening (L, N1). — Lepromatous tissue frequently takes this form instead of appearing in definite nodules; or nodules and diffuse thickening may appear in the same patient. Early thickenings are often found in the forehead, eyebrows and the area between, cheeks, chin, or ear lobes. Later, any part of the body may be involved.

As with nodules, these areas are loaded with bacilli. A diagnosis of leproma should never be made unless bacilli are demonstrated. At times senile wrinkling may closely simulate leprous infiltration in appearance.

Tuberculoid lesions may also be rather diffuse, but generally are distinguished by redness and well demarcated borders. In "tuberculoid reaction" the distinction is more difficult, as bacilli are usually present, sometimes in fairly large numbers; but this condition generally subsides in a few weeks or months, and no doubt remains.

Differential:

1. Erysipelas and cellulitis may simulate both lepromatous and tuberculoid thickening, especially when the latter is in reaction. In lepromatous thickening bacilli are always found. In tuberculoid reaction where the patient is usually not very ill, and shows little or no fever, bacilli may be absent. It is safer to treat any doubtful case (i.e., without anesthesia or organisms) as erysipelas, and then if it does not subside under treatment, leprosy becomes more probable.

2. Seborrheic dermatitis may resemble leprosy, and is frequently fouund in conjunction with it. The criteria of anesthesia and presence of bacilli again apply.

(5) Anesthesia (N).—"A condition of total or partial insensibility, particularly to touch" (Gould's Medical Dictionary). This definition is offered to those who feel the word should not be used unless sensation is completely lost. I know no better term; "dysesthesia" to me suggests pain too strongly, and "hypesthesia" seems inadequate.

The development of leprous anesthesia follows a regular progression. First, the ability to distinguish heat from cold disappears. (Thus a patient may be unaware of the presence of a hot object and burn himself, yet the burn may be painful.) Next in order come loss of light touch, pain, and deep touch perception. Exceptions occur rarely, such as loss of pinprick discrimination before thermal and tactile anesthesia occur.

Since thermal anesthesia is first to appear, and is practically a constant finding in neural cases, diagnostic examination usually need not consider the other types (though an occasional case will call for complete checking even if thermal anesthesia is not found). Two test tubes containing water are used; one cold—preferably ice cold—the other hot, but not over 107 F. (41.6 C.), as one does not wish to test *pain* at this time. The patient closes his eyes (if malingering is suspected, a blindfold may be used, or hands tested behind his back) and he is asked to say "hot" or "cold" when touched. When the test is positive, some patients will guess, but wrongly;

others, perhaps more conscientious, will say, "I can't tell" or "I can't feel anything."

Light touch may be tested with a feather, a wisp of cotton, a fine camel's hair paintbrush, or a twist of paper. For pain sensation, a pin is used; an ordinary pin stuck through the end of a wooden tongue blade is convenient. The patient is touched lightly, and asked to call "sharp" or "dull." Sometimes one may draw the point of the pin lightly over the anesthetic area and see the patient wince as sensitive skin is reached. This may be of value in small children and mentally defective adults.

Anesthesia usually appears first in the area of the fingers supplied by the ulnar nerve (little finger and adjacent half of ring finger), and a little later the peroneal nerve area of the toes. Other nerves are soon involved, and the area of anesthesia spreads centripetally, sometimes involving the entire skin surface of the extremities and much of the trunk. Simple neural macules are typically, though not invariably, anesthetic; tuberculoid macules less frequently. Isolated areas of skin with no other clinical finding may also show anesthesia, but this is less common. Lepromas are sensitive unless found in an otherwise anesthetic area.

Differential:

1. Syringomyelia is a relatively rare condition which may be mistaken for leprosy, but the opposite error is probably more common. It is rarely diagnosed in regions where leprosy is prevalent. In this disease there is no nerve enlargement, and anesthesia tends to spread centrifugally—both evidences of central nervous system causation. Rarely the differentiation may be difficult.

2. Nerve injury may cause a very confusing picture. I have seen the young son of a leprous father who showed anesthesia of the ulnar nerve region of one hand and contraction of the little finger, but gave a history of injury to the ulnar nerve at the elbow when beaten by his mother. Here the only choice was to watch for development of further symptoms.

3. Burn scars may be anesthetic, or by nerve involvement cause anesthesia and other trophic symptoms. But the burn may have occurred because of thermal anesthesia. Careful history is important, and testing of the area proximal to the scar.

(6) Ulceration (L, Na).—This is not strictly an early lesion, yet it may be the first sign which brings the patient for examination. Lepromatous skin is characterized by thinned and flattened epithelium, and is easily abraded and ulcerated. Ulceration is also frequent in lepra reaction. These ulcers abound in Hansen bacilli.

In neural cases, trophic ulcers occur in fingers and toes, especially on the plantar surfaces. They are usually associated with necrotic bone and will not heal until the bone is removed. Bacilli are usually absent.

Differential:

1. Other types of ulceration will not be confused with the lepromatous variety if it is kept in mind that bacilli are always readily demonstrated.

2. Tabes dorsalis may produce perforating ulcers similar to those of leprosy. The presence of sensory disturbances including "shooting pains" in arms and legs further complicates the picture. In tabes, deep analgesia is more important than superficial; and true (spinal) ataxia does not occur in leprosy. The patellar reflex is not disturbed in early leprosy; later, it may disappear if the nerve supply to the patellar tendon is involved. History is important and, in doubtful cases, spinal fluid examination (which shows no changes in leprosy) is—if possible—conclusive.* (Remember that one does not expect to find bacilli in *neural* ulcers.)

(7) Muscular Atrophy (Na).—Wasting of the muscles of the thenar and hypothenar eminences is a common and fairly nearly sign. Later, the interossei of the hands, then of the feet, may be involved. Atrophy of larger muscles comes later.

(8) Thickening of Nerves (N).—Any major or minor nerve trunk may show enlargement, and at times nodulation. Actual abscess formation is said to be common in India and some other places, but I have not seen it here. The first nerve to be noticeably involved is usually the ulnar, which may be palpated behind the elbow as it passes between the olecranon and the medial epicondyle of the humerus, and frequently for some distance above. Flexing the elbow makes the nerve more prominent. While a normal ulnar nerve is usually palpable at this point, marked enlargement, nodulation, palpable enlargement well above the elbow, and production of paresthesias in the fingers by mild pressure are all suggestive of leprosy, especially if associated with anesthesia.

If physicians would make it a routine practice to palpate the elbow for the ulnar nerve, many early cases of leprosy would come under observation.

The great auricular nerve is frequently enlarged so that it becomes visible when put on a stretch by turning the head to the opposite side. It stands out as a smooth or knotted cord crossing the sterno-mastoid muscle from below and behind and passing up toward the ear. At times it may be palpated when not visible. Caution: the external jugular vein occupies a similar location, anterior to the nerve. In case of doubt, pressure on the vein will interrupt the blood flow, causing filling above and emptying below; pressure on the nerve has no effect unless it be to produce paresthesias.

The common peroneal nerve may be palpated at times as it passes around the head of the fibula.

While other nerves, notably the radial and posterior tibial, may be involved, routine check of the first three is usually sufficient in a diagnostic examination

Differential:

1. Certain forms of neuritis might be confusing, but these are sufficiently rare that they need scarcely be considered. As part of a general clinical picture, nerve enlargemnt with anesthesia is almost conclusive proof of leprosy.

* I have found no reference to examination of cerebrospinal fluid in leprosy. Theoretical considerations and my own limited experience indicate that no abnormalities are to be expected.

(9) Paralysis (Na).—Paresis of either or both eyelids is a relatively early symptom. This may be manifest as a drooping lower lid (with the sclera showing below the iris) or by inability to close the eye completely. In the latter case the patient tends to roll the eye upward when he attempts to close it, so that the cornea is covered by the upper lid; paralysis of the eyeball muscles occurs rarely, if ever.

Later, there may be general paralysis of the facial nerve, frequently unilateral; and wrist or ankle drop.

Differential:

1. In Hawaii, wrist or ankle drop suggests leprosy rather than lead poisoning. Differentiation is not difficult.

(10) Loss of Hair (L).—Infiltration of the eyebrow ridges results in thinning of the brows, usually starting with the outer portions. This may be a very early sign.

Scalp alopecia is less common, but does occur, especially in patients of Japanese ancestry. It is patchy in distribution at first, with a tendency to spread.

Differential:

1. Syphilitic alopecia must be considered, but the lepromatous infiltration is usually definite and bacilli can be demonstrated.

(11) Loss of Perspiration (Na).—Anesthetic areas, and at times others involved in the polyneuritic syndrome, may cease perspiring due to the lack of nerve impulses. This, when it can be demonstrated, is a useful corroboratory sign, but its absence is not significant.

(12) Contractions (Na)—Contracture of fingers, later of toes, may occur relatively early. The little finger is usually first involved (ulnar nerve again). At first the fingers can be straightened passively without much difficulty; later the contracture becomes permanent and bony deformity follows. Early contractions are usually in the line of normal flexion, but bizarre extension and lateral deformities may occur later.

Suspect any contracted or shortened finger or toe, and if it is associated with anesthesia, regard it as leprous unless proved otherwise.

(13) Other Deformities (Na, L).—Bone lesions primarily due to leprosy are limited to hands and wrists, feet and ankles. Most are of neural origin, and are considered "trophic"; the exact pathogenesis is unknown, but vascular disturbances are probably important. Actual lepromas of bone marrow are said to occur rarely.

Absorption, first of phalanges, then of metacarpals and metatarsals, causes shortening of digits and may leave hands and feet mere stumps. Digits do not, however, drop off, as is popularly believed. There may be ulceration with bone necrosis, and frequently surgical amputation is used to relieve a distressing situation; but one often sees shortened fingers still bearing distorted nails.

Almost any sort of bone change may be found by x-ray, but three forms are most common:

1. Proliferative, then destructive lesions of joints frequently but not always associated with contracture. These are painless, because anesthetic; they have no diagnostic value.

2. Gradual thinning of the shafts of long bones, eventually to the point of disappearance, when the two ends remain as sharpened points, which later are absorbed, except for the proximal ends of metacarpals and metatarsals (Figure 4).

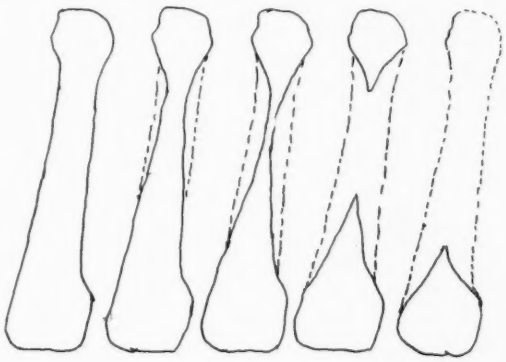

Fig. 4 Bone absorption of a metatarsal (semi-diagrammatic).

3. Charcot joint: ankle or distal bones of tarsus.

Roughening, thickening, and other deformities of the nails are common with or without shortening of digits.

In the male, enlargement of the nipple, usually a lepromatous infiltration with or without gynecomastia, is a common but not very early change.

Differential:

Bony change of the second type is almost diagnostic. Any partially absorbed long bone of the hand or foot, especially if the remnant is pointed, should arouse suspicion of leprosy.

Remember that leprous destruction of bone does not go above the wrist and ankle.

Note: Any other deformity, whether due to leprosy or not, should be included in the report of physical examination of suspects.

LOCAL EXAMINATIONS

(14) Eyes (Na, L).—Lid paralysis has been mentioned *(item 9)*. This may result in an exposure keratitis leading eventually to blindness.

A specific irido-kerato-cyclitis is common. Unless promptly and vigorously treated, this results in serious pupillary adhesions and even occlusion. Repeated attacks cause gradually increasing corneal opacity.

Actual nodulation may occur, starting at the sclerocorneal junction and spreading across the cornea.

In the two latter conditions, bacilli may be found in the conjunctival secretions.

Differential:

1. Syphilitic and leprous iritis may be similar. Presence of M. leprae is conclusive.

Caution: The irregular fixed pupil resulting from untreated iritis may simulate tabes.

(15) Ears (L)—Always inspect the ears from behind. Early nodules and thickening may be thus noted which otherwise would escape.

The ears are the commonest site of early lepromatous changes *(items 2 and 4)*. Later, the lobes may become pendulous. There is no specific change in the middle or inner ear, but many patients show chronic otitis media, possibly secondary to pharyngeal involvement.

It is stated by many that bacilli may sometimes be found in ear lobes which appear normal. I have not confirmed this finding.

(16) Nose (L, N).—The skin of the nose is a common site of early lepromatous change *(items 2 and 4)*.

The mucosa of the septum is frequently the first place in which bacilli are found, sometimes with no gross lesions apparent. At times they are found in the nasal mucus, especially if ulceration is present. Caution! *Acid-fast bacilli other than M. leprae are sometimes found here.*

In the nose[4] one sees reddening, swelling, sometimes nodulation, epistaxis, then ulceration, with formation of adhesions and eventual obstruction, if untreated. Absorption of septal cartilage occurs, with or without perforation, but the bone is only occasionally involved secondary to extensive spreading ulceration.

Differential:

1. Perforation of the bony septum occurs in syphilis, giving the characteristic "saddle nose"; in leprosy the cartilage is involved, which causes flattening of the tip of the nose while the bridge remains.

(17) Mouth and Throat (L).—Thickening and nodulation of lips, tongue, and palate are common, but relatively late, lesions. Still later comes ulceration of the soft palate, sometimes with perforcation of the cartilage or adhesions to the posterior pharyngeal wall. (As in the nose, bony perforation suggests syphilis.)

Leprous laryngitis is a common, but late, sign. The symptoms are hoarseness, later dyspnea, but no pain.

Differential:

Syphilitic ulceration of the soft palate, with adhesions, may closely simulate leprosy. But leprous lesions of this type are relatively late manifestations, and ample evidence of the disease should be present elsewhere.

Tuberculous laryngitis is painful, and the patient will usually show other evidence of tuberculosis.

M. leprae is demonstrable in mucous membrane lesions.

(18) Lymph Nodes (L?).—Inguinal nodes are quite commonly palpable. It is possible that node puncture might yield bacilli when other methods fail, but I have not found it necessary to resort to this; and the possibility of tuberculosis must, of course, be considered. Enlargement of the epitrochlear node is also common.

(19) Hands (Na, L).—Anesthesia, ulceration, muscular atrophy, wrist paralysis, contractures and other deformities are all common *(items 5, 6, 7, 9, 11, 12)*. Nodules on the hands are usually late manifestations.

A generalized skin swelling, sometimes limited to the fingers, is common and early. This may be the first symptom noted by the patient.

Get an x-ray if deformity is present, and submit it with the report.

(20) Feet (Na, L).—All the changes found in the hands may occur, but contractures are less common. Be sure to examine plantar surfaces for ulceration, which may occur surprisingly early.

(21) Genitalia (L).—I have not observed leprous changes in the female genitalia, but they have been reported by others. Involvement of the ovaries has not to my knowledge been demonstrated anatomically, although amenorrhea, temporary or permanent, is common in advanced cases.

In the male, lepromatous thickening and nodulation are common, especially on the prepuce and scrotum. Later there is leprous orchitis, followed by atrophy of the testicles.

(22) Internal Organs. (L?).—The only clinically recognizable internal lesions are enlargement of the liver, later of the spleen. As a rule these are relatively late. However, general examination should not be omitted, as it may furnish a clue to conditions other than leprosy which require consideration.

LABORATORY EXAMINATIONS

(23) Bacteriology—The Bacillus—The organism generally accepted as the cause of leprosy is Mycobacterium leprae, discovered by Armauer Hansen in 1870, and commonly referred to as the "Hansen bacillus". It is an acid-fast rod which closely resembles M. tuberculosis in morphology and staining characteristics; in fact, they often cannot be distinguished except by culture—M. tuberculosis will grow on artificial media (we use Petragnani's) and in guinea pigs; M. leprae will not.

In general, the Hansen bacillus is more easily stained and more readily destained than the tubercle bacillus. Fix the smear by heat, cover it with Czaplewski's carbol-fuchsin (Ziehl-Neelsen's will do), heat until it steams, then leave for five minutes. (Many prefer to stain for 20 minutes at room temperature.) Destain with one or two washes of 20% sulfuric acid, counterstain with Loeffler's methylene blue. Thick portions of the smear will not be destained, but these are ignored.

The Hansen bacillus tends to be shorter and straighter than the tubercle bacillus. A rod will often show 3 to 4 granules, especially in old lesions. The organisms are often clumped together, especially in the arrangement considered by some to be diagnostic of leprosy, the globus[5]. This is a rounded mass of bacilli varying in diameter from 10 to 100 microns or more. Apparently there is some sort of retaining membrane, although this has never been seen. The larger globi rarely show the neatly circular outline of the smaller ones, presumably because this membrane has been ruptured in the process of making the smear.

As yet, no satisfactory method of artificial culture has been found, either in vitro or in laboratory animals. In fact, deliberate attempts at human inoculation have succeeded but rarely.

To any interested physician or laboratory in the territory, I shall be glad to furnish unstained slides known to contain M. leprae. Stained specimens fade too rapidly to be of value.

Methods of Examination. For a long time the favored method was a smear of nasal mucus taken on an ordinary cotton swab. This has value only as a preliminary study. A positive smear should not be accepted in the absence of clinical evidence of leprosy, since non-pathogenic acid-fast bacilli are sometimes present in the nose. (These can be cultured on artificial media.) A negative smear is worthless; yet I have known advanced neural leprosy to remain undiagnosed because no bacilli were found on a nasal smear!

We seek the organisms where it seems likely they will be found. In lepromatous cases this is easy; nodules and thickened skin are rich in organisms, and they must be demonstrated for a diagnosis. I use Wade's method[6] of making a small incision—about 5 mm. long and 2 mm. deep—with a pointed scalpel (by preference a small, double-bellied blade, sterilized by flame). Some use a new razor blade. The blade is turned sidewise and a little tissue scraped from the bottom of the incision and spread on a new glass slide. Bleeding is avoided if possible, but it is not difficult to see the bacilli in the presence of blood.

This is properly known as the "scraped incision" method. It is *not* a "snip" (a snip is a bit of skin removed with scissors or scalpel, like a spot graft); but the term "snip" has been given such general usage in Hawaii, among both physicians and patients, that we must continue to use it. Who started this? (Perhaps "smear" would be a usable compromise.)

In neural cases, bacilli may be found in the active edges of macules, or in the nasal mucosa, or they may never be found—but the last does not rule out a clinical diagnosis. Tuberculoid cases are somewhat more likely to show bacilli, especially during a reaction (which may occur as a local manifestation without fever).

Mucous membrane lesions occur in both types of leprosy, and in some neural cases are the only sites from which bacilli can be obtained, if at all. Complete inspection is required with adequate lighting. If there is actual ulceration, a swab may suffice. (Some prefer to moisten the swab with normal saline solution before use.) In the many cases where the lesion seen is mild turgescence with possibly slight erosion, it is essential to investigate that spot, scraping with a sharp bistoury or curette, or a semisharp Freer submucous elevator[4]. Try to avoid bleeding by preliminary pressure on the spot, but be prepared for temporary packing if required. In mucous membranes the bacilli are close to the surface, so mild scraping usually suffices to demonstrate them if present. If no lesion is seen, scrapings may be made from the anterior portions of the nasal septum and the presenting parts of the turbinates. This should be done to every suspect in whom bacilli have not been found elsewhere.

It must be emphasized that in most purely neural cases bacilli will not be found, or they may be present at one time and absent at another in the same area. In such cases, if the clinical diagnosis is in doubt, biopsy may be helpful.

(24) Biopsy.—Biopsy is a last resort for diagnosis, and few if any pathologists, however skilled, would be willing to condemn a patient to the life of a leper on the basis of histologic findings alone, unless bacilli were demonstrated in the section. It has value as confirmatory evidence, or as a means of seeking scanty bacilli. For this purpose Fite's method of staining[7] is useful.

SUMMARY

Leprosy may find victims from among any race, sex, age (except early infancy), social condition, or occupation. Those most likely to be attacked are Hawaiian or part-Hawaiian school children, or young adults of average living standard or below, who have been in contact with known lepers or are members of their families.

Every physician in Hawaii should maintain a high index of suspicion for leprosy, know what to suspect and how to confirm his suspicions. A method of procedure is presented which I hope will be of value.

Not every case of early leprosy can be diagnosed by a single examination. Every suspicious case should be reported to the local health officer and carefully followed.

REFERENCES

1. Nolasco, J. O. and Lara, C. B.: Histological Study of an Early Case of Leprosy in a Young Child of Leprous Parents, Internat. J. Leprosy 9:181 (April-June) 1941.
2. Goodhue, W. J.: Leprosy in a Nineteen-Months-Old Child, Pub. Health Bull. 75:21 (Jan.) 1916.
3. The Cairo Congress, Internat. J. Leprosy 6:377 (July-Sept.) 1938. Report of the Subcommittee on Classification, ibid. 389.
4. Pinkerton, F. J.: Leprosy of the Upper Respiratory Tract, J. A. M. A. 111:1437 (Oct. 15) 1938; reprinted in Internat. Jour. Lep. 8:193 (April-June) 1940.
5. Denney, O. E.: A Microscopic Study of Mycobacterium leprae, Internat. J. Leprosy 2:275 (Aug.-Oct.) 1934.
6. Wade, H. W.: The Bacteriological Examination in Leprosy, Leprosy Rev. 6:54 (April) 1935.
7. Fite, G. L.: The Fuchsin-Formaldehyde Method of Staining Acid-Fast Bacilli in Paraffin Sections, J. Lab. & Clin. Med. 25:743 (April) 1940.

"Kissing Bug Bites"

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Although the bug whose "bite" occasions this report has been known in Hawaii for over forty years[1], we have been unable to find any recorded instance of its attacking human beings. Because such attacks may be more unrecognized than rare, and because they are puzzling if their cause is not realized, our two cases are being reported.

REPORT OF CASES

CASE 1. Mrs. E. R., a housewife, consulted one of us (D. B. B.) on March 28, 1943, because of 6 elevated red lesions, 1 to 3 cm. in diameter, on the inner aspect of the right forearm. These had awakened her by itching and burning early in the morning, and had later become reddened, swollen, and painful. At the time she was seen, a few hours after awakening, lymphangitis and axillary adenitis were present. The temperature was normal. After about three days the process subsided and the swellings disappeared.

On April 8 she returned with a painful, bluish-red swelling of the distal phalanx of the right fourth finger which had kept her awake all night. A small incision in the area produced free bleeding, but no pus. The pain and throbbing were relieved following the incision, and the swelling subsided. A reddened area on the dorsum of the middle phalanx could then be identified, which looked like the site of an insect bite.

The following day she returned with a red, painful, elevated lesion above the right eye, and redness and swelling of the eyelids on that side. On that day the patient was able to find and kill, in her bed, a large bug which was identified by C. E. Pemberton, entomologist at the Hawaiian Sugar Planters' Association Experiment Station, as Triatoma rubrofasciata (DeGeer).

CASE 2. Mrs. C. W., housewife, was seen by one of us (H. L. A., Jr.) on November 2, 1943 because of a painful, sharply outlined, elevated papule about a half inch (12 mm.) in diameter on the ulnar edge of the left hand. She said she had been awakened about 2 o'clock that morning by intense itching and burning in that area, and that the lesion had gradually become painful and swollen.

When she was examined, some eight hours later, there was a broad, bright red streak extending from the involved area to the axilla, and decided tenderness in the axillary area. The following day the swelling and pain were more marked, despite the use of hot hypertonic saline compresses and elevation of the arm, and an incision was therefore made in the succulent-looking plaque on the hand. Serum and a little blood were obtained. Forty-eight hours later the swelling had subsided and the redness was fading.

The patient admitted having seen bugs in her house which answered to the description of Triatoma rubrofasciata, and on the following day brought two live adult specimens to the office. Her home, like that of the first patient, was in Kaimuki, a dry, moderately elevated residential district on the southeast edge of Honolulu, behind Diamond Head crater.

DISCUSSION

Triatoma rubrofasciata (DeGeer) was first described by that author in 1773 as a Cimex[2]. It is a member of the Reduviidae, whose habits are well described by the lay names of *assassin bugs, cannibal bugs,* and *pirate bugs*[3]; whose appearance is well suggested by the lay name *conenoses;* and whose methods of attack may be inferred from the names *Mexican bedbug, giant bedbug,* or *kissing bug.*

The last of these nicknames—"kissing bug"—is the most expressive of all. It has reference to the fact that the bite is usually inflicted on exposed portions of sleeping victims—frequently, therefore, on the face, and, as often as not, the lips[4]. Moreover, it is apparently virtually painless at the moment—again, not unlike a kiss! It is only after the animal's withdrawal that itching and burning develop*, and still later that the painful swelling supervenes, along with lymphangitis and lymphadenitis.

A "kissing bug" scare swept the eastern part of the United States in 1898. It was apparently caused by newspaper accounts of a number of cases of bites inflicted by Melanolestes picipes and Reduvius personatus, which are members of the Reduviid family[3]. A similar scare occurred in Cincinnati a few years later.

Beside the discomfort and disability which result from the bite, the Reduviids are important vectors of American trypanosomiasis—Chagas' Disease—in South America. Herms[4] says that over 20 Reduviid species are able to act as vectors for Trypanosoma Cruzi. The method of transmission is by defecation and subsequent rubbing (by the victim) of the infected feces into the itching bite. Armadillos, opossums, some monkeys, and even cats and dogs are listed as potential or actual animal reservoirs.

Triatoma megista and Triatoma sanguisuga (LeConte) are apparently the commonest Reduviid species elsewhere; only Triatoma rubrofasciata has been described in Hawaii. Kirkaldy[1] states that it probably reached Hawaii from California, having come by way of the Antilles from Brazil. It is also to be found in Madagascar, where it has been suggested[6] that it may act as a vector in the transmission of kala-azar.

Triatoma rubrofasciata is easily recognized (Fig. 1). It is dull black in color, from one-eighth inch

* We have since been informed that the pain may occur immediately instead of being delayed.

(3 mm.) long when newly hatched to almost seven-eighths of an inch (20 mm.) long when mature, and approximately teardrop-shaped. The slender, sharp-pointed stinging proboscis is carried by the living bug folded sharply backward in a groove under the head, so that it is almost invisible. In the illustration

FIG. 1. Adult specimen of Triatoma rubrofasciata (DeGeer). Note the long, sharp-pointed stinging proboscis, and in particular the pattern of markings along each edge of the back.

it has been pried forward to make it show. There are 6 jointed legs. The edges of its back are decorated with a series of dusky brick-red markings a millimeter or so broad and slightly longer than they are wide—hence the "rubrofasciata", or "red-banded".

Although both of our reported cases lived in Kaimuki, and widespread inquiry among nurses, physicians and the laity suggests that T. rubrofasciata is commoner there than elsewhere in the city, it is widely distributed. It has recently been found in Manoa valley, the climate of which has little in common with Kaimuki, though the elevation is comparable.

SUMMARY AND CONCLUSIONS

A "kissing bug", Triatoma rubrofasciata (DeGeer), occurs in Honolulu.

Two cases of bites inflected on humans by this bug are reported.

The bite produces a clinical syndrome strongly suggestive of cellulitis with lymphangitis and regional lymphadenitis; areas of the body exposed in sleep (face, arms, hands) are most likely to be affected.

Shallow incision of the swollen bite-site seems to have a favorable effect on the course of the symptoms.

The bug's presence in Hawaii constitutes a public health hazard, since it is an important vector of American trypanosomiasis.

REFERENCES

1. Kirkaldy, G. W.: A Preliminary List of the Insects of Economic Importance Recorded from the Hawaiian Islands. Part II. Hawaiian Forester and Agriculturist 1:183 (July) 1904.
2. VanDuzee, E. P.: Catalogue of the Hemiptera North of Mexico, Berkeley, University of California Press, 1917
3. Howard, L. O.: The Insect Book, New York, Doubleday Page, 1901, p. 293.
4. Herms, W. B.: Medical Entomology, New York, MacMillan, 1939, pp. 93–102.
5. Fennel, E. A.: Personal communication.
6. Imms, A. D.: A General Text-Book of Entomology, ed. 3, London, Methuen & Co., 1934, pp. 367–368.
7. Pemberton, C. E.: Personal communication.

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C. E. Pemberton, Entomologist with the Hawaiian Sugar Planters' Association Experiment Station, assisted materially with the bibliographic material and loaned the mounted specimen for photographing. Dr. I. L. Tilden, of The Clinic, made the photograph.

Industrial Hygiene in Hawaii

A Review of the Industrial Hygiene Program of the Board of Health

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If we examine the history of industrial hygiene previous to the 1936 expansion we will find that the chief function of the industrial medical department was the treatment of traumatic injuries, with a gradual expansion to the medical phases of the problem. Then functions as pre-employment and periodic physical examinations, job placement and, more recently, medical and engineering control of occupational diseases began to take their rightful places in industry and government. Where, in the past, attention was mainly directed toward the improvement of machinery, recent activities are toward the economic waste resulting from failure to provide protection against controllable health hazards.

In the modern practice of industrial hygiene at least two main types of services are required—medical and engineering. The medical department concerns itself with the person, his hygiene, diagnosing diseases and primarily recognizing the existence of illness due to the working environment, while the engineer deals mainly with the environment. He makes an analysis, based either on the physician's findings or on independent studies, of conditions which may be detrimental to health and, determining the extent of the hazard, he considers methods for control or minimizing these.

Industrial medical and engineering services have in recent years concentrated a great deal of effort toward establishing the maximum concentration, or borderline, of safety for various circumstances. It was learned in the course of these studies that occupational health hazards may be divided into two main groups: those which result from contact with toxic substances, and those caused by adverse conditions.

In the potentially harmful substances group would be included dusts, gases, vapors, fumes, mists, certain solids and liquids and infective materials.

The second group, or potentially harmful conditions group, includes hot, cold and humid conditions, excessive light and heat, compressed air, confined air, confined positions, fatigue, eye and ear strain, irritation to the skin and questionable sanitary practices.

In certain respects the relative relationship of the two groups may increase the possible detrimental effect of the members of either.

The mode of entry of harmful substances into the body was learned also to have a major bearing on the subsequent damage to tissue.

Ingested matter may exert local action on the mouth and digestive tract, or, if devoid of such action, may be absorbed in the intestines in varying amounts, depending on its reaction with the enzymes present, as well as the food and its by-products. A relatively large portion of absorbed matter may pass into portal circulation and in some instances be satisfactorily handled by the liver.

When inhaled, some toxic substances pass into general circulation and are distributed to the heart and central nervous system with great rapidity. They can produce either a general toxic action without harm to the respiratory tract or a mixed effect, generally toxic and locally irritating. A few irrespirable vapors act so violently on the upper respiratory tract and lungs that their general toxic effects are secondary considerations. Therefore, under ordinary circumstances in industry, a substance is far more dangerous if inhaled than if ingested.

Skin contact is the third principal means of effect. Some airborne substances condense or collect on skin surfaces with which they come in contact, especially if such surfaces are moist. Thus they may collect on the skin of the worker or be found on clothing in quantities far greater than in the air. Their toxic effects are generaly produced without warning of exposure. If fat and water soluable, they may be absorbed through intact skin.

Most of the toxic substances which can become airborne in industry are without odor and are not normally visible. The use of appearance or odor as a criterion for estimating the concentration of a given vapor, dust, gas or fume in the air is not practical; it often leads only to a false impression as to the safety being provided. Even with decidedly odorous substances, such as chlorine and hydrogen sulphide, the absence of odor cannot be counted on in judging the possible chronic effect. Prolonged contact with amounts above the level of safety often causes the olfactory nerve endings to become blunted and the obnoxious odor so strongly perceptible in lower concentrations is then no longer even faintly noticeable.

As to dusts, those breatheable to the extent of entering the lungs lie in the field below the 10 microns size. These are not visible as individual particles even in a good light. Separate particles are noticeable only where the diameters exceed 50 microns.

Through the cooperative effort of research groups engaged in industrial hygiene activities, criteria have now been established on a sound epidemiologic basis which preclude, if maximum standards are not exceeded, the development of an industrial illness in a normal person.

PROGRAM IN HAWAII

To determine the need for an industrial hygiene program in Hawaii, a preliminary study was instituted in 1939. A brief survey of each industry was made with an analysis of the findings, which included type of substances utilized, possible by-products, handling methods, protective measures, sickness and absenteeism records, provisions for medical attention, labor turn-over, light and ventilation, sanitary practices and sanitary facilities.

Altogether, this cross-section involved 10,000 of Honolulu's established 64,000 workers. Over four hundred types of potentially harmful materials or conditions were recorded. Many speed-up or short-cut methods recorded on the mainland were noted to be on the increase in Hawaii.

Persons not familiar with the findings of this survey might be inclined to believe that Honolulu does not have in regular use many of the sickness-producing substances evidenced in the reportable illness index of many mainland states.

One such substance is free silica, the causative factor in silicosis. Our survey indicated that even then, in 1939, 1,987 persons came into intimate contact with substances containing this type of silica. These were in such occupations as denture grinders, foundry workers, pottery makers, tombstone cutters, metal polishers, sand blasters, machine shop workers using silicon carbide cutting instruments, quarry workers and many others. As regards local quarries, our laboratory studies, confirmed in part by the U. S. Geological Survey, indicated that the prevalent local idea that free silica is not to be found in rock here is erroneous. Some areas were found to be without silica in this uncombined state; in one section, representative specimens have run as high as 18 per cent. This is but one of the many things we were told do not exist in the Territory. It would have been more accurate to state that no extensive native silica problem is probable here.

STAFF OF THE INDUSTRIAL HYGIENE DIVISION

A study of the information compiled indicated that a staff consisting chiefly of a public health engineer and two or more chemists would be best suited for the solution of the principal problems involved.

Following the recent inauguration of our program, industrial Hawaii began to undergo tremendous change, placing additional responsibilities on the Board of Health. In an attempt to keep pace (for there has been no budget increase to meet the growing need of this work), all avenues were explored which might assure reasonable protection to the working public. The Army gave aid to this problem by assigning personnel to us for training. These men work out of our office, spending about sixty per cent of their time on Army projects where civilian workers are employed.

Even with this assistance, the mounting problems at times cause us to fall behind in our work. Attempts are being made to further extend our program by utilizing the local field representatives of insurance companies. These men assist in the field sampling procedures, while our laboratory staff makes the analysis.

THE PROGRAM

The total Board of Health industrial hygiene program covers a broad field as to both the number of persons influenced and the benefits derived from its activities.

A few of the principal activities are enumerated here: (1) Our unit does all the industrial hygiene work for civilian projects, the U.S.E.D., many departments of the Army, the Office of Civilian Defense and many federal departments, and collaborates with the Navy. (2) The program is a proven means of control of many of the short-period occupational illnesses which would otherwise cause absenteeism. (3) It has, to date, protected thousands of workers from toxic substances in relatively small doses which in concentration, and on prolonged exposure, could result in disability later in life due to chronic industrial illness. (4) Where needed, if protective equipment was not available, we assisted in improvising it. (5) Properly practiced, this program will help to prevent the transfer of the results of occupational illness to offspring at birth. (6) The program assists in preventing accidents both on and off the job by assuring that the worker's mind remains alert and that muscular weakness and lack of coordination, delayed reaction time and impaired judgment are not present to play a contributing part. (7) Our men and equipment are in constant demand by military and civilian forces where immediate and unforeseen emergencies occur which may affect the health of workers rushed to the site. This happens more often than most people would realize. (8) The program is a definite morale builder for workers on the job even where no health-affecting hazards are found.

In our dealings with industry and the military to date, we have been most fortunate. They accept our work for what it is—an educational and correctional program.

Our field studies have covered 171 different types of substances, beginning with acetone and ending with zinc. There were 27,047 persons involved in these examinations. Of these, 14,281 were working under conditions which necessitated modification.

Since the beginning of the program in 1940, we have made 2,187 laboratory tests, including both chemical and bacteriological studies, 543 illumination studies, and 996 separate field instrument checks in regard to ventilation. We have provided solicited information in 361 industrial engineering or chemistry problems and reviewed 97 sets of plans for new construction or major renovation.

Even here in Hawaii, with its geographic advantages of constant mild climate and negligible seasonal variation in sunlight intensity, it is often noted that too great restrictions are placed in the path of the natural functioning of these assets. Along with our regular work we are presently recording information upon which to base suggestions to those engaged in the design or maintenance of industrial housing which we hope will lead to greater utilization of these natural elements. To date, about 65 per cent of the industrial illness possibilities found were due either to inadequate light or to improper ventilation.

Today industrial hygiene needs to be practiced more vigorously than ever before. Production speed-up requires that short-cuts around known safe methods be taken to conserve time. Shortage of key chemicals or materials has occasioned the return of toxic substances once set aside by industry as too hazardous for normal use, or these shortages have led to the development of new raw materials, the harmfulness of which has not been fully investigated.

During World War I, although industrial health hazards were many, they were principally due to processes involving metals, acids, alkalis and asphyxiants. The solvents utilized at this time were few and simple in structure, such as benzene, naphtha, petroleum, ether and the like, and relatively harmless as compared with the coal tar and complex petroleum derivatives now in general use.

The primary requisite of a modern solvent is that it act quickly and strongly on oils, fat, grease, gums, lacquers and all other coatings, and then dry quickly. Both these properties present great danger to the worker, for such a solvent has affinity for the fats in the human body and when it reaches the blood stream, makes for the fatty substances in the nervous system.

In modern industry, while the other hazards are still present, volatile solvents are the greatest single problem in occupational health.

As the lack of man power becomes more acute, the scope of the total industrial hygiene program is materially broadened. New workers on unfamiliar jobs is but one of the newly added problems.

MEDICAL PROFESSION'S PARTICIPATION

In order to develop further the general structure of the present industrial hygiene program for the Territory, we would like to offer assistance to the medical profession in tracing down the possible sources of illness in industrial cases, as far as our limited personnel and equipment will allow. When conditions return to normal, the physicians in turn could perhaps aid us.

In the Territory there exists at present ample machinery for reporting mortality statistics. More specific data could be recorded to ascertain occupational activity where excess mortality may be especially noticed.

Even when this may be adequately practiced, mortality statistics, although useful and important, have their limitations. They do not offer information concerning sicknesses that do not terminate fatally. Sydenstricker and others have shown a striking contrast in the picture afforded by sickness as compared with death records. This was evident even in the peace-time period when their work was accomplished. They have shown that the nationwide ratio of respiratory illness to deaths from respiratory causes averages more than 300 to 1; that diseases and disorders of the digestive system averaged about 200 cases to 1 death. For more adequate knowledge of the health status of industrial workers mortality data should be supplemented by records of sickness. The principal reliable source of such information would necessarily have to be the doctors.

While national and regional reports of accidents, industrial diseases, and high occupational death rates appear to be impressive, the less dramatic side is probably by far the more important, namely, the lost time and incapacity due to illness. The vast amount of wasted energy and life due to preventable illness, a sizeable proportion of which may be contributed by the working environment, presents a problem in need of our serious attention.

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EDITORIALS

ATTENTION, ALL DOCTORS!

Complete details of the Emergency Maternity and Infant Care Program of the Children's Bureau of the U. S. Department of Labor appear, beginning on Page 241, of Issue No. 4, Volume 124, of the Journal of the American Medical Association (January 22, 1944). Every doctor who is interested in his profession should read, thoroughly digest, and form an opinion regarding this extraordinary document.

FEDERALLY FINANCED OBSTETRICS

The bewildered witness of whom the cross-examining attorney demanded a Yes or No answer to the question, "Have you stopped beating your wife?" was in no more of a spot than the obstetrician and pediatrician fractions of the medical profession in their contemplation of the Emergency Maternity and Infant Care Program of the Children's Bureau of the United States Department of Labor.

The plan provides for free obstetrical and pediatric care for the wives and infants of all members of the United States Army, Navy, Marine Corps, or Coast Guard, if in the 4th, 5th, 6th, or 7th pay grades. Such service is to be supplied by personnel of hospitals of the United States Army, Navy, or Public Health Service when such is readily available, *and by private practitioners, clinics, or hospitals when such is not.* Private practitioners, clinics, and hospitals are to be paid for their services at rates arbitrarily fixed by the Children's Bureau.

Disapproval of the Children's Bureau plan lays the medical profession open to the charge—false though it obviously is—that doctors are callous to the needs of the wives and children of service men, that they are hard-hearted, money-chasing individuals who would line their pockets at the expense of the soldiers' and sailors' loved ones.

Compliance with the plan, on the other hand, is tantamount to public endorsement of questionable procedures in medical practice of which few responsible members of the profession approve, and which the majority believe may lead to deterioration of obstetrical and pediatric standards throughout the nation.

The cross-examining attorney's embarrassing question has long been quoted as an example of sharp practice.

The E.M.I.C. program, ostensibly for the benefit of the wives and children of service men, but potentially a "foot in the door" for state medicine on a broader, grander scale, would appear to be in the same category, especially if the manner of its formulation and presentation is scrutinized.

It seems regrettable that a profession whose recognition of its fundamental obligations to humanity, rich and poor alike, is traditional should be put in a position of having to argue its concern for the welfare of the wives and children of men of our armed forces. To make the medical profession do so is an effective device—and a slick one—to draw attention from features of the E.M.I.C. plan which are startling to say the least—even tragic if they are the signs of what is to come.

For there is something startling about a govern-

ment bureau offering gratis to a considerable block of the nation's population something it doesn't have title to, in this instance, the services of obstetricians and pediatricians in private practice.

It is somewhat startling to learn that the doctor's recompense, set by the government bureau and to be paid for by the government, is a sum arbitrarily fixed and limited, without consulting the sellers of such services and without regard to whether the figure is above or below cost.

It is even more startling when the obstetrician or pediatrician discovers that every service man's wife who receives a dependency allotment has been notified that his (the doctor's) services are available free, to her and her babies, and that the doctor who cares for her and her children will receive from the government a fixed fee which may fall far short of equalling his own expenses incident to such service.

No one—and least of all members of the medical profession—would argue that the best of obstetrical and pediatric care (as well as all other measures conducive to their welfare and well being) should not be available to dependents of service men.

There is no reason to believe that such services would not be available to them in most instances through ordinary existing channels with or without the "emergency" plan of the Children's Bureau.

Certainly no one would object to the Army and Navy taking care of their members' dependents with their own doctors and hospitals in so far as such is possible.

Nor would many object to the Government giving aid to defray or help defray the cost of obstetrical and pediatric services where such services are not available from Army and Navy sources.

But the character and quality of obstetrical and pediatric services become jeopardized when the Children's Bureau by bureaucratic edict, in effect, orders private individuals in obstetric and pediatric practice to take care of these beneficiaries at less than it costs to give the thorough, efficient services that the profession's standards demand.

Approval *can* be given one aspect of the scheme: its intention to see to it that the wives and dependents of service men do get adequate obstetric and pediatric care. With that motive physicians can have no quarrel. Regardless of their natural unwillingness to be forced on a federal payroll, and regardless of the inadequacy of the proposed fees, this motive must be a guiding principle for the profession in whatever course of conduct its members pursue. The fee is inadequate to cover the costs of the services; for many it will likewise seem inadequate recompense for the loss of self-respect entailed by entering the vanguard of state-employed "private" practitioners; *but be that as it may, the best obstetric and pediatric care available must and shall be rendered to the wives and dependents of our soldiers, sailors, coastguardsmen and marines.*

PROCUREMENT AND ASSIGNMENT

Thirty-five doctors of Hawaii must shortly make the choice between voluntarily seeking a commission in the Army or Navy, or being drafted.

That so large a number of doctors of military age are still among us and not in uniform appears to have cast reflections upon the physicians of Hawaii as being derelict in their duty and in their patriotism.

Time and the shifting of the theater of war has effected many changes since the 7th of December 1941, and it is in the light of these intervening events that the position the doctors find themselves in today should be considered.

In the anxious months up to the beating off of the Japanese fleet at Midway, this area was considered a front line of defense, and the private physicians were regarded by the military as an indispensible adjunct, in case of need, to the military medical personnel then stationed here. Following the attack on the 7th, here as elsewhere throughout the country, many doctors came forward to join the service; however, they were made to accept the fact that their job, for the time being at least, was here on the home ground, without uniform.

Except for those in the naval reserve who were called during the period of declared emergency in June and September of 1941, and the Army reserves called in immediately following the 7th, the military has until now considered no applications from local doctors for commissions in either the Army or Navy. In the parlance of Procurement and Assignment, they were "essential" even though not individually so designated.

Gradually, as the war was pushed farther and farther from our shores, and medical requirements changed from emergency to rear line services, the need for a large stand-by group of private physicians diminished, so that now, as Procurement and Assignment turns its attention toward us, Hawaii stands by comparison with other communities in an unfavorable light, as if its doctors had intentionally and culpably lagged behind the mainland doctors in the prosecution of the war. Actually, this is not so; and moreover, the medical profession in Hawaii made a very praiseworthy showing in its civilian defense organization and its aid to the military on December 7th.

Following the recent visit of Dr. Frank H. Lahey, National Chairman for Procurement and Assignment for Physicians, to study availability of doctors from Hawaii, the local Procurement and Assignment

Board was set up, consisting of Dr. Forrest J. Pinkerton, Chairman, and Drs. Benyas, Hodgins, Pleadwell and Fred Lam. To this committee will be added an advisor from each of the outlying islands to assist in the administration of their assignment.

The appointment of Dr. Pinkerton as Chairman for Hawaii was upon the recommendation of the Council of the Hawaii Territorial Medical Association to the War Manpower Commission in Washington, and the selection of the four other members that make up the Board was made, with the approval of the Council, from physicians who were neither directly nor indirectly attached to a group that had draft-age members; who had neither relatives nor assistants of draft age as partners; who were above the age limit, and who in no way, directly or indirectly, could be charged with having some axe to grind.

Dr. Pinkerton, in the meeting called for February 24th, presented the problem to the physicians of Honolulu as follows:

> We are told in an official communication that the bottom has been scraped for medical men in the United States and men must be found to make up a deficit of some 6000 men. Since the status of Hawaii has been changed, P & A has been activated to enlist as many medical men as this community can spare.
>
> In the judgment of the Bureau at Washington, confirmed by Dr. Lahey, each community in meeting its own peculiar problems is necessarily influenced by geographic factors, economic considerations, customs and community prejudices. And so we have the onerous responsibility of making the decision as to how many physicians can be spared from Hawaii without curtailing the medical care of the community. That is the function of P & A, to wisely keep *from* the service the men "essential" to the community and wisely make "available" *to* the service the men who may be spared and considered nonessential to the community.
>
> There are 104 physicians in the Territory of the draft age:
>
> 52 Caucasians
> 19 Chinese
> 29 American-Japanese
> 3 alien Japanese
> 1 Korean
>
> These are distributed by islands as follows:
>
> 74 on Oahu
> 20 on Hawaii
> 6 on Maui
> 1 on Kauai
> 1 on Molokai (perhaps 2, if we count one who is not really eligible under Territorial law)
> 1 on Lanai
>
> For ideal functioning, as far as medical care is concerned, a community should have a ratio of 1 doctor to 1500 population. On the Island of Oahu our figure is 1-1354; on Hawaii 1-1832; on Maui 1-2473; on Molokai 1-2670; on Kauai 1-2741, and on Lanai it is 1-3720. The over-all ratio for the Territory is 1-1554.
>
> The Territory has already contributed 34 of its physicians to the armed services. Of this number 24 are from the Island of Oahu—7 Chinese, 2 Japanese, 16 Caucasians; from Hawaii, 1 Japanese; from Maui, 5 Caucasians; from Kauai, 2 Caucasians and 1 Japanese.
>
> There were originally 345 physicians practicing in the islands, of which 6 were alien Japanese and detainees. On that basis Hawaii has contributed slightly less than 11 per cent of its medical population to the military services. If we adhere strictly to the 25 per cent for the over-all average of the United States, then Hawaii would be expected to produce another 50 physicians.
>
> How many physicians can be spared from the Territory without seriously crippling the medical care of the civilian population? We have estimated this figure at 35 as a maximum.
>
> The main object of the local P & A Board is to find out how many doctors, within the draft age or up to 45, are available for military service without seriously damaging medical service to the civilian population.
>
> According to the classification that has been set up by Washington, and as it has worked on the mainland, every doctor within the draft age is automatically "available" under classification 1-A—(a) if not married, or (b) if married and maintaining a home with his wife, and (c) if married and maintaining a home with his wife and children. This classification goes up the scale depending upon the number of children. Children born after September 15, 1942 do not affect this classification.
>
> Physicians of draft age are urged to make application for a commission in the Army or Navy at the following locations:
>
> Army: Office of Civilian Affairs, Headquarters, Fort Shafter
> Navy: Naval Reserve Office, Old Naval Station, Honolulu
>
> When making such application it is necessary to have a certificate of availability from the local P & A Board. Such certificate may not always be granted; it depends upon the importance of the applicant's work in the community. If he happens to be "essential" to the community, P & A may adjudge that he be kept in the location sixty days pending procurement of another to take his place. At that time he will be declared "available" for military duty.
>
> If an applicant fails to pass the physical examination for the Navy, that does not eliminate him from making application to the Army where he may be accepted.
>
> If he is also disqualified by the Army he may remain on the available list for re-examination at some later date, or he may take the place of someone who is "essential" and wishes to be released to go into the service.
>
> If a man has been marked "available" and wishes to appeal this decision, such appeal must go to the National Procurement and Assignment Service in Washington.
>
> Procurement and Assignment has not only the task of supplying doctors to the Army and Navy, it has the problem of relocation also.
>
> Several institutions in Hawaii need additional medical personnel. In lieu of a commission, a qualified man of draft age may be selected for a position in such an institution. If he waives this and does not choose to go into the service as a volunteer, he is subject to the draft.

Communications from Hawaii, Maui and Kauai indicate a need for relocation of physicians to the other islands. This has been somewhat contributed to by several doctors' leaving the other islands and coming to Honolulu to practice. At the time they did this it was their own affair, but now it is a matter of everyone's concern as to how these islands will be taken care of. In a city practice a doctor can take care of many more persons than in the rural set-up of the other islands.

We are advised that no doctors can be spared from the Island of Hawaii. On Kauai they need one more doctor; also on Molokai. The Island of Maui appears to be able to carry the load very well. In the opinion of the board, no doctor there is considered non-essential to the community.

So it seems we have a multiple task to perform: (1) to secure doctors for the Army and Navy; (2) to see that the community here is not damaged by sending "essential" men into the service; (3) to re-locate doctors from this island to the other islands, and (4) to see that certain institutions have more help, that would call for the relocation of a doctor, and it may be someone from the draft-age group.

DISCUSSION

COLONEL CLARENCE E. FRONK—You are all registered, from 21 to 64. Selective Service is only interested in those below 38. There has been no induction in the past two years in Hawaii but beginning next month there will be a monthly induction—500 will be called in the first month. The first to be inducted will be the single men; second, the married men without children, and third, married men with children.

The local boards are the final authority as to who will be called. The national organization and the territorial boards are only advisory. We will look entirely to P & A service for our information on the physician-inductees.

It does not mean, because a selectee has been turned down once, that he will not be called again. One half of the 8,000 registrants in Class 4-F have been reclassified to 1-A. Almost all of the registrants turned down by the Navy in class 4-F have been reclassified 1-A for the Army.

DR. JESSE W. SMITH—If a man is a specialist, is he going into the Army or Navy as a Junior Lieutenant or will his qualifications be given some recognition?

GENERAL EDGAR KING—Consideration has been given to such things. I cannot say what consideration will be given in the way of increased rank, but as to assignment, I have never known of a qualified specialist who was not busy in that specialty sooner or later.

COMMANDER WITHINGTON—In the Navy your original rank is a matter of age. A man who has a specialty, particularly of a certain type, is much more likely to be placed in that specialty. In this particular district there is a standing demand for psychiatrists, x-ray men and dermatologists. There is also a constant demand for men who are general practitioners. In this district the assignment of men is left to the District Medical Officer.

CLINICAL NOTES

NOVOCAINE INJECTION FOR LOW BACK STRAIN

One of the most frequent and troublesome problems encountered in the ambulatory patient, whether military or civilian, is that of low back pain following lumbo-sacral strain. It is beyond the scope of this paper to deal with the differential diagnosis of low back pain per se, which may involve such divergent pathological findings as sacralization, spondylolisthesis, prostatitis, herniated nucleus pulposus, or even malignant disease. It is intended, rather, to point out the usefulness and rationale of the procaine hydrochloride injection method in treating the large group of cases due to comparatively minor trauma. The value of this method in selected cases has been emphasized by such investigators as Steindler and Luck, Kellgren and Haggart, yet it is surprising how frequently this proven procedure is overlooked in the management of these patients.

Etiology

The type of low back strain under discussion usually occurs in the ligaments which resist forward rotation of the upper sacrum; the lumbo-sacral, the interosseous sacroiliac, and the short and long posterior sacroiliac ligaments. Such strain may exist chronically as a result of faulty posture characterized by some degree of lordosis and visible thrusting of the ischii to the rear. It may occur in the acute form during inexpert lifting in which the pelvis is more or less fixed in anterior rotation while the sacrospinalis muscles accomplish the lift with a minimum of mechanical advantage. Some element of muscular and myofascial strain occurs coincidentally with the ligamentous damage, but in the light of physical examination of the patient it is felt that the bulk of the clinical picture is referable almost entirely to the ligaments themselves.

Pathologic Physiology

It has been shown by Badgley and also by Steindler, following observation of large series of cases, that pain in these patients is due to irritation of sensory nerve endings in the ligaments involved. These structures are supplied by the posterior division of the spinal nerve; and the most workable concept of the pain in these cases is that of referral, with afferent impulses originating in the damaged ligament being reflexly distributed to other post-axial nerve trunks. The traumatized ligament acts as a trigger point initiating discharge of the pain impulses. This pathologic concept is well borne out by symptoms usually presented by the patient and by subsequent disappearance of the pain following breaking of the reflex by local procaine hydrochloride injection.

Approved for publication by the Department Surgeon's office, Hawaiian Department.

Diagnosis

Symptomatically, the outstanding complaint is simply that of "lame back", chronically present since injury and subject to exacerbations upon repetition of exertion. Pain is always localized in the lumbo-sacral region in general but the individual will seldom be able to point out with the finger-tip a single small area of pain; it is usually described as "all through here" or "across the small of my back", the indicated areas being larger than the hand which vaguely points them out. It can, however, usually be established that one side is more painful than the other. Perhaps the most important subjective finding, and one which must often be asked for specifically, is that of sciatic radiation of the pain upon effort resembling that which produced the original injury; this radiation is very often present and follows the concept of pain referral mentioned above. This finding also is generally unilateral.

Examination of the patient reveals two outstanding features, spasm of the sacrospinalis on the side involved and point tenderness over the homolateral posterior sacroiliac ligaments. The muscular spasm does not necessarily indicate damage to the muscle but rather a protective splinting of the generally painful back. This spasm is frequently a painful thing in itself, making subjective localization still more difficult. Tenderness over the ligaments, however, is well localized. Systematic palpation should be carried out, exerting thumb pressure first just medial to the posterior superior iliac spine over the short posterior sacroiliac ligament, then proceeding caudally over the long posterior sacroiliacs and cephalically to the iliolumbars. The interosseus sacroiliac ligament cannot be accurately palpated, but being the strongest ligament in the body is less susceptible to strain than its fellows. It will be found that one or another of the first three sets of ligaments exhibits marked local tenderness, predominantly unilateral, and reproducing the set of symptoms experienced by the patient during exacerbations. Importantly, the palpation typically produces the reflex sciatic radiation emphasized by Steindler and Luck.

In thirty-four cases studied from this standpoint, it was found that tenderness was present over the short sacroiliac ligament in twenty-four instances, over the long sacroiliac in eight, and over the iliolumbar in the other two. In twenty-eight the finding was unilateral. Twenty-one cases demonstrated sciatic radiation upon pressure. Duration of symptoms in these cases varied from one day to eight months, with eight cases classified as acute and 26 as chronic. Sixteen had received previous treatment variously consisting of heat, adhesive strapping, and salicylates.

Treatment

Having demonstrated that these ligaments act as trigger points for the discharge of reflex pain, their infiltration with procaine as recommended by Kellgren and by Steindler may be employed with very satisfactory results. The temporary anesthesia thus afforded acts to break the pain-producing reflex, permits relaxation of the spastic sacrospinalis muscle, and abolishes the vicious circle which has been set up by repeated trauma.

The technique of injection is very simple. The patient is first questioned regarding previous sensitivity to the drug during dental or other treatment. The point previously localized as the pain source is marked with gentian violet. The skin over the region receives surgical preparation with soap, alcohol, ether and a skin antiseptic. A 10 cc. syringe is fitted with a 22 gauge spinal needle and filled with 2 per cent procaine with 1:1000 Adrenalin. A second syringe containing Adrenalin or Coramine is kept at hand for use in the rare cases of sensitivity reaction. The needle is introduced through a skin wheal directly over the tender trigger point, and inserted straight in, injecting ahead of the needle, until the resistance afforded by the ligament concerned is met. Three cc. of procaine solution is then injected around the ligament and the patient observed for signs of unfavorable reaction. If none is present, another 4 cc. is injected.

With the patient still on the table, the needle is withdrawn and the now anesthetic trigger point is firmly massaged with the thumb to assist distribution of the solution. Manipulation is then done in the following manner: With the patient turned on his left side and facing away from the operator, the patient's right arm is brought backward to encircle the operator's waist. The operator's left hand is placed on the right shoulder, his right hand on the right iliac crest. Steadying the shoulder by gentle backward pressure of the left hand, sudden pressure is applied down and forward with the right hand, producing right anterior torsion of the pelvis. This is accompanied by a snap of the vertebral articular facets of almost osteopathic proportions. The same manipulation is then carried out with the patient on his right side.

Reexamination of the standing patient indicates virtually complete relaxation of the sacrospinalis muscles, abolition of the ligament tenderness and freedom from subjective complaints. In the more chronic cases it has been found useful to supplement the injection treatment with an encircling adhesive strapping so applied as to eliminate lordosis and pelvic tilting while it is in place. This is especially true in patients who need postural instruction to eliminate the original cause of their strained ligaments. The acute cases and those of less than a month's duration with a traumatic history do not ordinarily require strapping.

In twenty-five of the thirty-four cases treated by this method a single injection was sufficient to effect a cure, with no recurrence after six months of observation. In four instances injection was repeated the following day with cessation of symptoms; and in one, recurrence of symptoms after three weeks necessitated an additional injection, and, three months later, a third, which to date has given four months' relief. Three cases in which a rheumatic component was present were injected for diagnostic purposes and were failures from a therapeutic standpoint. One case, receiving only about fifty percent relief from the first injection, refused further treatment.

Selection of cases for treatment is of considerable importance. One must establish that the low back pain is due to strain of the ligaments in question, and for this purpose the diagnostic criteria mentioned must be adhered to. In this connection, however, the injection is sometimes quite valuable as a diagnostic medium alone. In addition, it is felt that the patient with acute low back strain, unless immediate mobilization is required, should receive a brief trial of conservative therapy by strapping, rest, and heat for one or two days. This will often effect a cure and make invasion of the sacroiliac region unnecessary. I used to feel that the conservative regimen should last for two or three weeks before injection was undertaken, but with rapid rehabilitation of personnel presently of such importance, the time was gradually shortened to the present length with no untoward effects and with an unbroken series of satisfactory results. In the chronic case, first seen after weeks or months of discomfort, injection is done as soon as the diagnosis is established. When a single injection fails, giving only partial relief, infiltration should be repeated to catch whatever portions of the ligament were missed originally.

Summary

Strain of the ligaments resisting forward rotation of the upper sacrum is presented as a frequent cause of low back pain. The reflex nature of symptoms and signs is discussed according to the investigations of various authors, with sciatic radiation emphasized as a diagnostic point. The use of local injections of procain, hydrochloride is presented as a well-established technique which is often overlooked in the management of these cases.

Bibliography

1. Badgley, C. E.: Clinical and Roentgenological Study of Low Back Pain with Sciatic Radiation, Am. J. Roentgenol., 37:454, 1937.
2. Kellgren, J. H.: A Preliminary Account of Referred Pains Arising From Muscle, British Med., J., 1:325, 1938.
3. Haggart, G. E.: Sciatic Pain of Unknown Origin: An Effective Method of Treatment, J. Bone and Joint Surg., 20:851, 1938.
4. Steindler, Arthur, and Luck, J. V.: Differential Diagnosis of Pain Low in the Back. Allocation of the Source of Pain by the Procaine Hydrochloride Method, J.A.M.A., 110:106, 1938.
5. Luck, J. V.: Unpublished Lectures.
6. Grant, J. C. Boileau: A Method of Anatomy, Second Edition, Williams and Wilkins Company, 1940.

CAPT. WILLIAM L. ARGO, M.C., A.A.F.

CLINICO-PATHOLOGIC COMMENT

CYSTIC STATES OF THE OVARY

Many physicians, even those doing gynecologic surgery, have but a nebulous understanding of the histogenesis and pathologic nature of various common cystic states of the ovary.

It is unfortunate for the female of the species that, during the course of evolution, her ovaries came to be so accessibly located in the abdominal cavity, within reach of any surgeon. It is also unfortunate that their removal is not attended by immediately apparent harmful effects. It is even more unfortunate that these labile structures manifest their function, in the normal course of events, by visible alterations in size, shape and external appearance. It can truthfully be said that the ovary possesses no fixed morphologic structure; it changes its appearance, at least during the reproductive period, from month to month and even from day to day. Thus a static anatomical concept of the "normal ovary" is necessarily false, and failure to appreciate this fact has resulted in the needless removal of many ovaries under the mistaken impression that they were abnormal.

For these reasons the following brief review of cystic states of the ovary is being presented.

Non-neoplastic or Non-proliferative Cysts

These are by far the most common cystic lesions of the ovary found in surgical or post-mortem specimens, and the commonest of these is the small *follicle cyst* or follicular cyst. These innocent little structures are universally present in ovaries and must be regarded as physiological by-products of the hyperplasia-involution cycle in the ovary. They may be single or multiple, and they vary from microscopic size up to 4 or even 5 cm. in diameter, although the great majority are less than 2 cm. in diameter. They almost always contain thin clear fluid or pink coagulated gelatinous material and always exhibit a smooth, glistening, white or bluish-white internal lining devoid of papillary excrescences of any sort. Hemorrhage occasionally occurs into them; under these circumstances they are filled with clotted blood and constitute one variety of the so-called "chocolate" cyst of the ovary. They often bulge somewhat from the surface of the ovary, and, if they are multiple, form the so-called "small polycystic ovary," a physiologic state erroneously interpreted as pathologic by some surgeons.

It will be recalled that each month a number of primordial follicles start to develop, of which only one reaches maturity. As the ovum dies and becomes absorbed, the remainder undergo atresia, and, during the process, fluid often accumulates with the formation of a small cyst. In most instances the fluid is gradually absorbed and the end result is a small dense scar, the corpus fibrosum; only occasionally does such a cyst become large enough to produce symptoms.

Microscopically, the nature of such cysts is usually immediately apparent, since they are lined by granulosa cells (of follicle origin), although at times no epithelial lining can be found (because of pressure atrophy) and the exact classification of the cyst is then in doubt. The important point to bear in mind is that these little cysts have no relationship whatever to true neoplasms. It should be clear from the foregoing that a pathologic diagnosis of "follicle cysts" refers to a physiologic state in the ovary and does not in itself justify removal of the ovary.

Luteal cysts are also very common. They may be either single or multiple and vary greatly in size, seldom becoming larger than 4 cm. in diameter. They commonly contain blood clot and are lined by a soft festooned lining which may be yellow or white. If the cyst is of recent origin, the lining membrane is yellow and convoluted in cross section, resembling the corpus luteum from which it is derived; if the cyst is of long standing, the lining is apt to be white and somewhat fibrous. There is usually no difficulty in recognizing such cysts microscopically since they are lined by large pale lipoid-filled cells similar to those constituting the corpus luteum.

As their name implies, these cysts are derived from the corpus luteum, a structure which normally is partially cystic and which normally reaches a diameter of 1½ or 2 cm. It is thus a difficult matter, and one of no practical importance, to make the fine distinction between a cystic corpus luteum and a corpus luteum cyst.

A rare variety of luteal cyst, the theca-lutein cyst, is described, characterized by luteinization of both granulosa and theca interna cells and occuring usually with hydatidiform mole or chorionepithelioma, where there is tremendous production of chorionic hormone. I have not yet observed this condition. For practical purposes luteal cysts may be regarded as arising from the corpus luteum and should in general be regarded as physiologic, although they are more prone to undergo spontaneous rupture than the more common follicle cyst.

The *germinal inclusion cyst* may be mentioned in passing, although it is of little practical importance to the physician. It is small, often microscopic in size, and is formed by "dipping downward" and subsequent "pinching-off" of the germinal epithelium covering the ovary. The result of this process is the formation of a small cyst beneath the surface of the ovary which is lined by flattened or cuboidal epithe-

lium; its only practical importance is the fact that it is sometimes erroneously identified histologically as aberrant uterine mucosa

Neoplastic Cysts of the Ovary

Endometrial cysts are relatively common and are usually associated with endometriosis of other pelvic structures. They may be single or multiple and are invariably filled with "chocolate" material. They vary considerably in size but seldom get very large since they are prone to undergo perforation with dissemination of their contents throughout the pelvis. They are lined by endometrial or tubal epithelium, usually the former, and exhibit varying amounts of endometrium-like stroma beneath and around the epithelium. It is the latter finding which makes the histologic diagnosis easy but, even in the absence of stroma, the correct diagnosis can usually be arrived at by the character of the epithelium, the nature of the contents, and the presence of blood pigment, much of it within large macrophages, in the wall. Such cysts, of course, not physiologic and are a part of the general problem of endometriosis, which cannot be considered here. One practical point is that *a "chocolate cyst" of the ovary may be of follicle, luteal or endometrial origin, and the microscope is the only sure means of determining which.* Thus the surgeon should not jump to the conclusion that he is dealing with endometriosis when he finds a number of "chocolate" cysts in the ovary unless there is unequivocal evidence of endometriosis elsewhere in the pelvis.

These structures, true neoplasms in every sense, have no relationship to the structures mentioned above. There are three fairly common, more or less distinct, types of cystic neoplasms of the ovary which differ in their histogenesis, morphologic structure and clinical behavior, and, if justice is going to be done to the patient, the surgeon should have some understanding of these facts

The *dermoid cyst* is the commonest cystic neoplasms of the ovary in Hawaii as determined by a survey of the surgical material at the Queen's Hospital, St. Francis Hospital, and Kapiolani Maternity Home. It is generally said to rank third in frequency, below serous and pseudomucinous cystadenomas. Its gross structure is so characteristic and well known that there is little purpose in describing it here. Microscopically it is lined by stratified squamous epithelium and there are abundant hair follicles and sebaceous glands in its wall. It is composed predominantly of ectodermal derivatives, although, if a careful enough search is made, tissues derived from the other germ layers can usually be found. It should perhaps be regarded as a peculiarly benign one-sided (ectodermal) development of a teratoma. Malignant change may occur, although it is extremely rare, and always takes the form of a squamous cell carcinoma arising from the lining of stratified squamous epithelium.

Serous and *pseudomucinous cystadenomas* of the ovary occur with about equal frequency in Hawaii and are not quite so common as the dermoid cyst. The pseudomucinous cystadenoma is unilateral or bilateral, usually multilocular, and its compartments are filled with a sticky mucoid glycoprotein called "pseudomucin" because it fails to give the chemical reactions of true mucin. Such cysts are characteristically lined by a single layer of tall columnar epithelium with basal nuclei and many goblet cells, identical in appearance with much of the epithelium which lines the gastrointestinal tract. Such neoplasms consequently should be regarded as one-sided developments of teratomas in which the entodermal elements have blotted out the derivatives of other germ layers, just as, in dermoid cysts, the ectodermal elements predominate. I have observed on two occasions a combined dermoid cyst and pseudomucinous cystadenoma in the same large cystic tumor of the ovary—very convincing evidence that they both are predominatly monogerminal teratomas, arising, of course, from the germ cell itself.

The serous cystadenoma bears only a superficial resemblance to the pseudomucinous type and differs in its histogenesis and clinical behavior. It may be unilateral or bilateral, unilocular or multilocular, and contains clear serous fluid rich in protein. It is characteristically lined by low cuboidal or flattened epithelium and is frequently papilliferous in nature, exhibiting villous processes or wart-like projections either into the lumen of the compartments or from the external surface. It undoubtedly arises from the germinal epithelium covering the ovaries; in fact, all stages of development from this epithelium have been repeatedly observed. I have seen a number of very small serous cystadenomas of the ovary, in some of which a direct transition to the germinal epithelium could be found. It is of interest that many of these early tumors show astonishing fibroma-like proliferation of connective tissue, so that one wonders whether this, rather than epithelial proliferation, may not be the primary neoplastogenic change in the development of these tumors.

It is thus clear that serous and pseudomucinous cystadenomas of the ovary are radically different both in their histogenesis and in their gross and microscopic structure. Their most important difference, however, is in their biologic history: only 5 per cent of the pseudomucinous variety become malignant while by conservative estimate at least 20 per cent of the serous type result in carcinoma. The importance of this statement is obvious, yet, strangely enough, very few surgeons attempt to make the distinction between these two types of neoplasms preoperatively, during the course of the operation, or postoperatively.

Summary

With all due apologies to Novak, Meyer, Meigs, Hertzler and others, and to the surgeons, a brief review of neoplastic and non-neoplastic cysts of the ovary has been presented.

The Clinic I. L. TILDEN, M.D.

HOSPITAL NEEDS

THE QUESTION OF A CONVALESCENT NURSING HOME

To answer the question of the need for a convalescent-nursing home is to recount a stream of requests for such a haven that has been increasing in volume over a number of years. It has now reached threatening proportions.

The time, effort, and money spent hunting and advertising for homes have been largely wasted, to say nothing of the uncomfortable feeling engendered by having a patient in such homes, regarding which little or nothing is known, and the subsequent unhappiness of the patient who finds himself in a "home" which has proved quite unsuitable to his needs and taste. The feeling of wasted effort which hospital personnel, accustomed to caring for acutely ill patients, sometimes experience in dealing with the chronically ill, the latter's untoward reaction when conscious of being unwelcome, and finally, the anxiety of not a few who see their financial resources strained beyond reasonable limits to pay for care in a hospital, are factors not to be disregarded.

Last Spring the Honolulu County Medical Society sent questionnaires to all its members and the following is quoted from replies received from 76 doctors:

> 596 patients admitted to hospitals during the year could have been discharged earlier, if a suitable convalescent-nursing home had existed;
>
> 40 such patients could have been currently discharged;
>
> 23 chronically ill patients were being attended at home by special nurses who might otherwise have been working in hospitals where there existed an acute shortage of nurses.

In discussing this need the term "convalescent-nursing" will be used, for though the categories are distinct, a properly planned home can care for both the convalescent who is recovering from an acute illness and the chronically ill, including the aged, who needs more or less nursing care indefinitely.

With the exception of the city and county's Maluhia Home, which has ward accommodations only, for patients who are indigent or on the fringes of indigency,there is no suitable institution in Honolulu for persons between this economic level up to and including those who are in the most favored financial brackets but who are either without homes or without relatives who can, or are willing to, take care of them.

Maluhia Home was established for adults, but, "because there is nowhere else for them to go," children are sometimes sent there. This is neither good medical nor good social practice. There are many minors, not necessarily confined to the indigent,whose parents or homes are quite inadequate, or whose mothers are working, or who for many other adverse reasons cannot get proper convalescence and are therefore being re-admitted to hospitals.

The Bureau of Crippled Children under the Board of Health has repeatedly presented the need for a home to care for children or minors still under medical supervision but no longer in need of hospitalization.

There is always the danger, too, in hospitals, of the older children, or adolescents, coming in contact with adult patients of unwholesome influence.

The Vocational Rehabilitation Bureau wants an institution where they can more adequately rehabilitate; they want a place where crippled adults as well as children may have access, while convalescing, to well equipped workshops. There is no reason, except for the lack of proper facilities, why one who has lost limbs, or the use of such, should become a mental or an emotional cripple as well.

Therefore, in considering this subject one should bear in mind the type of home needed, ages and disabilities, and whether or not it should include patients on services subsidized by the government.

To recapitulate, there are no proper facilities in the Territory to give convalescent or nursing care to patients who are able to pay for it, to children whose homes are inadequate or who come from the other islands, or to adequately rehabilitate cripples.

It has been pointed out that nursing homes which have sprung up in the past have all faded out. Will not another one likewise fail? The failures of these homes were due to one or more of the following reasons: they were too small; the owners were unknown; they were run on a profit basis; financial backing was lacking; there was inadequate organization or poor administration, or poor standards. Careful planning on a sound financial basis would establish the home envisioned. There would be accommodation ranging from wards to private rooms, and as there would not be the extra services supplied by hospitals — surgery, x-rays, laboratory, etc., — the overhead would be comparatively small and the patient of moderate means would be better able to pay for it.

Physicians like the convenience of having their patients under one roof but by the same token they perhaps feel obliged to visit them more often than is necessary. Sick people can be over-demanding of attention and feel neglected if their doctors, making rounds in a hospital, are not including them; whereas in a convalescent-nursing home they would be content with fewer calls. Also such a home ,staffed with responsible personnel, would call an attending physician if and when necessary.

Human nature is such that illness has a tendency to bring out recessive traits and patients long hospitalized can become dependent to the point of being nuisances to a hospital personnel. Frequently attempts are made to move such patients out. It has become well nigh impossible to find an "out". The disciplinary problems are not the acutely ill, but those who remain long past the time the hospital is doing them any good.

It was a most difficult matter, at the time of the blitz, to find domiciles for the chronically ill who were boarding in a hospital (one for eight years). A few of the less economically favored were most unhappy in the places to which they were sent. A repetition of the same difficulties would have to be faced in the event of another emergency (not necessarily war connected) if these convalescents and "chronics" had to be moved out in a hurry because the beds were needed for the acutely ill.

Planning and running a hospital for the acutelly ill is an entirely different matter from planning and running a convalescent-nursing home. In a hospital there must be maintained a certain nurse-patient ratio and because of the quick turn-over of patients, nurses must function according to routines applicable to the acutely ill. If in such a hospital there are also convalescents and chronics who need comparatively little actual nursing care, the nurses nevertheless proceed in routine fashion to give these persons more time-consuming care than they actually need. Nor will such patients generally accept less. On the other hand, in a convalescent-nursing home, the ratio of nurses to patients would be much lower. Also to a much greater extent than is possible in the hospital, a trained nurse in such a home can be assisted by practical nurses. It is reasonable to suppose too that there are women now doing excellent work under the Red Cross, as nurses' aides, who would be glad to continue to be of service. Finally, the atmosphere of a convalescent-nursing home would be conducive to patients' doing as much as possible for themselves—in itself good therapy.

The patient's (or the relative's) pocketbook too deserves some consideration and in this regard we are constantly aware of strains and conflicts in families subjected to the excessive cost of care for members in the hospital or elsewhere. In yesteryears when life was at a quieter pace, when tensions were less, when homes were larger, when servants were obtainable, it was not as difficult as it has since become to care for convalescents or chronics in their own homes or in the homes of relatives; this is particularly true where there are young people full of the health and noise of growing up. There are cases now of families, with children in the most expensive ages of growth, paying $500 a month for the board and nursing care of chronically ill relatives in the private homes of nurses. There are also in a community of this size single men and women not necessarily aged who, being incapacitated, can no longer live in hotels or boarding houses.

The present shortage of personnel is a problem which we would have to face and which might hold up the scheme for the duration. On the other hand, moving suitable patients from hospitals to such a home, where adequate care could be given to a larger number of people by less personnel, might in turn bring some relief to the limited personnel in hospitals.

The present over-all per capita cost for a patient at Queen's is $8.50 a day. Ward rates for bed and board are $5.00. Bed and board in a private room in a convalescent-nursing home could probably be had for $5.00 or $6.00 per day and for less in wards. The more expensively furnished rooms would, of course, cost more, but in any case not as much as comparable accommodations in a hospital.

Even if such a home did not pay, at least for a while, it would be a step in the right direction. It would in all probability have to be subsidized for several years. It is conceivable too that by interesting people in such a home, we might secure grants as memorials or through wills.

In conclusion, it would seem that the time is ripe to establish a convalescent-nursing home in Honolulu. It may not be possible or expedient at the outset to do it in its entirety—convalescents and "chronics", minors and adults, private patients and those subsidized by government, on a territorial rather than county basis—but it might be wise to consider all in a master plan which, beginning on a less pretentious level, would look well into the future. To this end the Honolulu Chamber of Commerce, presently interested in a survey of hospital beds, has been approached by the Honolulu County Medical Society and the Hawaii Territorial Medical Association. It would be well for the Chamber of Commerce to consult with the Hospital Association, the Nurses' Association and the Hospital Social Service Association, all of whom are close to the problem and are, therefore, able to offer constructive ideas to an over-all plan that would include setting up, financing and administering a home as an entity in itself, with its own board of managers, filling a need in the community of which there is no longer any doubt.

MARGARET M. L. CATTON,
Director of Social Service,
Hospital Social Service Association

EMERGENCY MEDICAL SERVICES

(FORMERLY MEDICAL PREPAREDNESS)

In July 1943, the First Aid and Ambulance Division of the Emergency Medical Service reduced its monthly budget to approximately $15,000.00 from a monthly average of about $45,000.00, a reduction of $30,000.00. A considerable number of people were released thereby to enter other activities, but it is gratifying to note that a large percentage of this group has maintained a volunteer status at the first aid stations which they helped to operate during the tense defense period. At present only three first aid stations in the city continue to operate on a 24-hour basis. A few stations maintain skeleton staffs at night; all others are closed. The few "night" stations have limited their staff to a nurse and a nurses' aide who keep the station in a state of readiness to facilitate mobilization. As time goes on and the military situation develops more favorably, further alterations in this organization will be indicated.

General hospitalization facilities continue to be offered at Sacred Hearts Hospital and at Wahiawa. The monthly operating cost of these hospitals is $2,000.00 and $21,000.00, respectively, but receipts from patients, all remitted to Washington, should be credited against this. The hospitalization program on the outside islands has been altered somewhat and is reported in detail below.

Maneuvers

All-out maneuvers were held in the city last September and in the rural areas in November. A surprise maneuver in the city was staged in November All agencies of the O.C.D. participated and the Army provided the incidents, making the test as realistic as possible. Much information was gained and many lessons were learned by all concerned. Greater de centralization of the O.C.D. was deemed necessary to deal with incidents promptly. Accordingly three divisions of the Emergency Medical Service were set up in the city. These are charged with the responsibility for casualty collection and casualty treatment, and have been given autonomous control to clear incidents automatically. Such divisions will call upon the next higher authority only when further help is needed. The O.C.D. control center will oversee the general picture.

The morale of the personnel continues to be high. Although the greater part of the personnel now manning O.C.D. medical installations are volunteers, there was 100 per cent attendance at maneuvers and alerts. More tests of this nature will be given in the future.

Mobilization of Hospital Personnel.

Some confusion seems to exist among hospital personnel as to the correct procedure to follow in responding to duty during the sounding of the air raid alarm. A directive from this office, sent to all concerned, directed each hospital to decide how it was to mobilize its own personnel. One hospital preferred to have all essential personnel, paid or volunteer, report to their posts immediately on sounding of the air raid alarm. This automatic method of mobilization allows the doctors of blitz teams, nurses, nurses' aides, fire fighters, litter bearers, vehicle drivers, etc., to report to duty immediately. The resident staff prepares to evacuate patients, sets up the triage and casualty receiving wards and operates fire control stations. This method is very satisfactory and permits the hospital to be fully equipped and staffed for maximum effort within fifteen minutes of the first air raid alarm.

The "All Clear" is *not* a signal for hospital personnel to leave their posts; they should remain until discharged by competent authority (usually the chief of staff or superintendent of the hospital).

It is suggested that all hospitals adopt the mobilization procedure just outlined.

Transfer of O.C.D. Hospitals to the Army

Several O.C.D. hospitals on the outside islands have been released to the Army—Maunaloa on Maui, and Huleia, Waimea and Makaweli on Kauai. The physical plants and some medical equipment were transferred to the Army on an operating agreement whereby the Army agrees to treat and hospitalize civilian casualties during any emergency.

Hospitalization of Tuberculosis Patients

A 100-bed annex has been completed at the Wahiawa Emergency Hospital for the care of tuberculosis patients. This plant consists of three large ward buildings, each equipped with private rooms for seriously ill cases, treatment and examining rooms, a large serving kitchen, dining room, and laundry. One hundred civilian patients were transferred to this annex from Tripler General Hospital in November. Dr. de Harne, the Medical Director, is assisted by Dr. Takenaka, and the medical staff of Leahi Hospital supervises the patients. Patients will be exchanged between Leahi and Wahiawa according to treatment requirements. The annex is operated by the O.C.D. staff of the Wahiawa Emergency Hospital. The Department of Public Welfare is financing the project under agreement with the O.C.D. Fifty-two civilian tuberculosis patients still remain at Tripler General Hospital.

Nurse Recruiting Program

The O.C.D., until recently, recruited nurses for the hospitals of the Territory. This service has been turned over to the War Manpower Commission. Because of a recent ruling whereby the authority for clearing and releasing recruited personnel was placed in the hands of the local War Manpower Commission, thus taking out of the hands of the O.C.D. any control over the persons it had recruited, it was decided that the War Manpower Commission should also do the recruiting.

An analysis was recently made of the nursing service of Queen's Hospital, at the request of its directors, by Miss Margery MacLachlan of the O.C.D. Nursing Division, in an attempt to simplify and expedite the nurses' work so as to better utilize their time and energy and attain maximum efficiency. Miss MacLachlan's services are available for this purpose to any hospital upon request.

Clarification of Principles in Management of War Gas Casualties

The following routine is advised by the Emergency Medical Service and the Gas Defense Division of the O.C.D. as the procedure for handling gas casualties:

(*a*) Vesicant gas casualties will leave the gassed area as quickly as possible, remove clothing and bathe at the nearest water faucet, using plenty of water and soap, and proceed for chemical treatment to the nearest decontamination station under their own power. After chemical treatment they will be sent to the nearest first aid station for medical treatment. Most of these cases will be sent home; those in need of hospitalization will be sent to the nearest hospital.

(*b*) Vesicant gas cases, with wounds, will get out of the gassed area under their own power, if they can, or such cases will be evacuated by *other* than medical service personnel. Outside the gassed area they will receive decontamination service by the Mobile Squad and be sent to the nearest decontamination station for further chemical treatment. If decontamination is completed in the field, the patient can be sent directly to the first aid station for medical treatment. If a vesicant gas casualty cannot be thoroughly decontaminated in the field and ambulance service is necessary, the nearest aid station will send an ambulance. Before that ambulance can be placed in service again for transportation of medical casualties, however, it must be decontaminated.

(*c*) Lung irritant cases (phosgene) will be litter cases from the point of origin; be picked up by ambulance and taken to the nearest aid station for treatment and further disposition. Phosgene and other allied lung irritants are non-persistent gases; no decontamination is necessary.

Upon the completion of two years' activity, the Territory of Hawaii can rest assured that its Emergency Medical Service will continue to render efficient service and provide the maximum in civilian medical protection. Recent alerts and maneuvers have shown definitely that its personnel, as a result of their regular musters and training sessions, are capable of manning their posts efficiently and without confusion.

H. L. ARNOLD, M.D.,
Territorial Medical Director.

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COUNTY SOCIETY REPORTS

HAWAII COUNTY MEDICAL SOCIETY

The 222nd regular meeting of the Society was called to order by the President at 5:30 p.m. at the Honokaa Club on November 14th. The Society was guest of Drs. Bergin, Carter, Larsen, Okada, Shimamura and Woo. The occasion was the semi-annual dinner meeting. Twenty-one members and guests were present.

Request was read from the Principal of the Hilo High School for approval or disapproval by the Society of the plan of sex education outlined in Dr. Nils Larsen's book "Facing Life" which was recommended for adoption in the high schools and about which there was some uncertainty about the reaction of parents to such a program. The Principal asked for a committee to confer with him. A committee consisting of Drs. Hirsch, Orenstein and S. R. Brown was appointed to study the plan and report back to the Society.

A letter from the Kona Social Agencies stating the inadequacies of the present foodhandlers' examinations was read. It was generally agreed that the present methods were not sufficient for the protection of the public. The President will consult the Board of Health regarding the new regulations and will report back to the Society. The Kona Social Agencies will be assured that the Society will give the problem utmost consideration.

Dr. Hirsch reported on the blood and plasma insurance program soon to be inaugurated at the Hilo Memorial Hospital; he stressed the importance of a physical examination, which he felt should be done gratis. Dr. B. Brown backed him up on this point.

A. ORENSTEIN, *Acting Secretary.*

MAUI COUNTY MEDICAL SOCIETY

At the November 28th luncheon meeting of the Maui Society, held at the Wailuku Hotel, Dr. H. L. Arnold, Jr., from Honolulu, was guest speaker. His topic was the treatment of the common skin lesions, illustrated by colored slides. He recommended treatment of recurrent herpes simplex and herpetic stomatitis with smallpox vaccine intradermally and claims it to be very effective for herpes of the eye also. He first vaccinates the patient, then gives approximately one-half the contents of a capillary vaccine tube intradermally. The dose is stepped up gradually.

Dr. Arnold was invited to repeat the skin clinics, held at Paia, Puunene and Wailuku, at regular intervals, and he has promised to come to Maui about April 1st.

No new business was discussed. Guests, in addition to Dr. Arnold, were Dr. Frank St. Sure, Jr., Major Proffitt and Capt. Bell; twelve members attended.

W. B. PATTERSON, M.D., *Secretary.*

HONOLULU COUNTY MEDICAL SOCIETY

At the regular meeting of the Society on Friday, November 19, at 4:30 p.m., Major Gerard de Oreo, Chief of the Section on Dermatology & Syphilology at Tripler General Hospital spoke on the Modern Concepts in the Treatment of Syphilis.

The Board of Censors' recommendation, approved by the Board of Governors, for expulsion of Dr. Peter L. Young, was confirmed by a unanimous ballot.

The following resolution presented by the Board of Governors was adopted upon vote by the membership:

RESOLUTION

WHEREAS, it has come to the attention of the Board of Governors in recent months that the question has repeatedly been raised as to the propriety of appointing to local hospital staffs physicians of alien birth or American citizens of German or Japanese ancestry,

BE IT RESOLVED, that the Honolulu County Medical Society go on record as recommending to the hospitals that the eligibility for appointment to such hospital staffs be on the basis of licensure to practice medicine in the Territory of Hawaii and that the physician be known to be in good standing, professionally and ethically, and that it is not considered within the province of the medical society or the hospitals to adjudge a man's standing, politically or nationally; that task presumably being in the hands of appropriate agencies of the government.

The regular meeting of the membership for December was held on the 10th at 7:00 p.m. Frederick A. Schramm, Director of the Industrial Hygiene Division, Bureau of Sanitation, Board of Health, presented a paper on "Industrial Hygiene Program of the Board of Health." Discussion was by Dr. Nils P. Larsen, and Lt. Rodney T. West, M.C., USNR. Attendance about 25.

The business before the Board of Governors at the December 3rd meeting was as follows:

Membership. Accepted to service memberships:

David L. Adler, Major, M.C., A.U.S.
William S. Cornell, Lt. Col., M.C., A.U.S.

Dr. Tokuji Takahashi. Letter from Dr. Arnold dated November 22nd requesting expulsion as an enemy of the U. S. was considered. Dr. Takahashi had been dropped from membership at the end of the fiscal year 1942-1943, so that no action as suggested was in order.

Plantation Health Plan. Dr. Benyas reported on the meeting of the HTMA Council with Drs. Rothwell and Liljestrand and read letter from the Council transmitting proposed HMSA plan for plantations.

Library Endowment. Drafts of letters read; general consensus they lacked appeal. Drs. Molyneux, Winter and Smith appointed to draft another letter.

Hospital Bed Shortage. Dr. Bowles reported meeting of Chamber of Commerce with medical society and hospital representatives and action that Chamber make a survey. Mrs. Bolles reported meeting of Public Health Committee, voting to make survey and using $2,500 already set aside for use of gathering preliminary data.

Dept. Public Instruction. Request was made for a fee schedule for vocational rehabilitation of physically handicapped. Secretary instructed to advise that fee schedule is in process of revision. Charges for cases meanwhile may be arbitrated.

C & C Patients. Resolution adopted by Board of Supervisors and approved by Mayor was read, authorizing the C & C physician to pay to the Honolulu County Medical Society, through the various hospitals, amounts equal to 20% of hospitalization, not to exceed $12,000 annually.

Nurse Shortage. Letter from Dr. Arnold, December 2nd, asking for representative to meet re regulation of nurses employed in hospitals, and brought in by OCD.

The consensus was that the War Manpower Board ask for a medical advisory board to pass on medical releases.

Building Service Charge. Letter was received from Program Committee asking that the 50 cents service charge be adjusted in cases where the medical society caters its own buffet refreshments upstairs.

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Literature on Request

SANDOZ CHEMICAL WORKS, Inc.

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LIBRARY NOTES

MICROFILM COPYING

The Library recognizes that microfilm copying is a service which publicly supported reference libraries may well perform on an equal basis with that provided for readers and by interlibrary loans. In the pursuance of such a policy, *microfilm will be sent without charge in lieu of the loan of the books to those who prefer them or where books or journals cannot be loaned.*

In addition to the service to individuals, to accredited research institutions and to the various governmental establishments, microfilm copying is being conducted with special reference to the needs of the widely scattered medical units of the Armed Forces. This emergency need accounts now for the major part of the microfilm activities of the Army Medical Library and they are expanding at a rapid rate.

The operation of Medicofilm Service, which has hitherto done microfilm copying in this Library at a cost just sufficient to pay its way, will be practically suspended beginning September 1, 1943.

Since microfilm copying is being done by this Library to promote medical research in its broadest aspects, orders may be sent direct by individuals or through the librarians of hospitals, medical schools and other institutions located in this country or elsewhere. In general, only the separate articles in the periodical literature will be copied. Long run copying may be done in special cases but will be subject to such modifications as the facilities of the Library and the present restricted supply of film, dictate.

In order to simplify the operation of the copying service, the use of order blanks will no longer be required. Titles and references to articles of which microfilm copies are desired should be written on letter paper and a carbon copy of each request should be included.

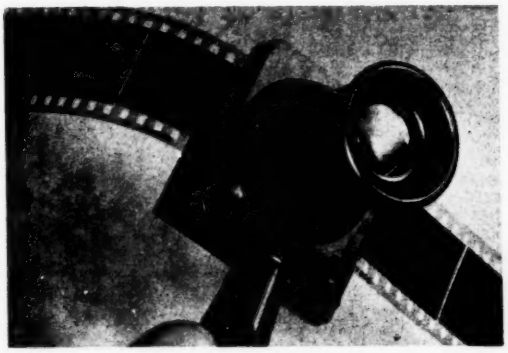
Governmental and emergency war establishments need not include postage where films are requested. In the case of all others who take advantage of this service in lieu of interlibrary loans, the franking privilege cannot be granted and medical librarians and individuals should send postage as follows:

For articles not exceeding 100 pages, send 1½c
For articles not exceeding 400 pages, send 3c
For articles over 400 pages, send 4½c stamps

Send orders to:

Photoduplication Service
Army Medical Library
Washington (25), D.C.

A NEW MICROFILM VIEWER



After many delays which were occasioned by the war emergency, the microfilm viewer pictured above has finally been put into quantity production. It is being sent now, to all those who have asked to be put on the list to receive it. To others who request microfilms from the Photoduplication Service of the Army Medical Library, it will be sent on approval. The price, $3.75, is what we transmit to the manufacturer. Our own contribution is simply that of acting as intermediary in getting them promptly into the hands of those who need them.

The viewer is provided with a space for the film which is large enough to receive a kodachrome or other pictorial slide. This will enable the manufacturer to offer them to the general public at a later date, through photographic supply dealers. Thus will be reached a sufficiently large market to permit an eventual lowering of the price.

It is adapted especially to the needs of those in isolated places and of those who wish to take the literature pertaining to their work, to their home or elsewhere for more leisurely study than is possible in the laboratory or the library.

Orders, including payments for the microfilm viewer shown above, should be sent to

Medicofilm Service
Army Medical Library
7th St. & Independence Ave., S.W.
Washington 25, D.C.

A limited supply of these readers is carried by the Honolulu County Medical Library for your convenience at the same price.

OBSTETRICAL ABSTRACTS

Dr. Nichol J. Eastman in the "Foreword" introducing the *Quarterly Review of Obstetrics & Gynecology,* states that there has long been need for an abstract journal of Obstetrics and Gynecology in the English language. Such a periodical serves several purposes. In the first place it calls to the notice of the reader a vast array of articles which he would otherwise miss; and some of these he may find of special interest and value. Secondly, if the papers are well selected and comprehensively abstracted, a publication of this kind is a valuable time saver—surely, no small consideration in these hurried days when the pressure of practice leaves little time for medical literature. Finally, the bound volumes of an abstract journal, when properly indexed, constitute a most useful reference work in which the whole recent literature on any given subject may be reviewed in sequence.

DIETETICS

The Prior Service offers printed diet sheets as follows which the library will be glad to send for on request:

Acidosis	Following Ulcer	Obesity
Colitis	Gallbladder	Pellagra
Chronic Arthritis	Disease	Peptic Ulcer
Constipation	Hyperacidity	Soft Diet
Diabetes	Hypertension	Smooth Diet
Fluid Diet	Increasing	Starch-free
Nephritis	Weight	Visceroptosis

The *Handbook of Nutrition* has been added to the library as a gift from the A.M.A. by whom it is published. This book embraces in its authorship most of the leading authorities on nutrition in the United States. It provides the latest literature on proteins, carbohydrates, fats, mineral salts and vitamins. The price is $2.50.

NEW DRUGS

New and Nonofficial Remedies, 1943. The terminology of the official drugs has been revised to conform to the U.S.P. XII and the N.F. VII. Textual changes and revisions do not appear to be as numerous as in some previous editions. The chapter, Digitalis and Digitalis-like Principles and Preparations, has been extensively and somewhat radically revised to keep pace with the changing attitude toward this drug. In this revision the Council on Pharmacy and Chemistry of the A.M.A. had the aid of the foremost digitalis authorities, pharmacologists and clinicians alike. No such spectacular new additions as the appearance in a previous volume of the sulfonamides is to be noted. Among the more noteworthy of the new additions are Niketharnide, the central nervous system stimulant which was first introduced as Coramine; Diethylstilbestrol, the synthetic estrogen; Trichinella Extract for the diagnosis of trichinosis; and Zephiran Chloride, a mixture of alkyl dimethyl benzyl ammonium chlorides, an interesting new anti-infective agent.

NEW ALLERGY JOURNAL

Annals of Allergy, published by the American College of Allergists, bimonthly, made its first appearance in July 1943, edited by French K. Hansel of St. Louis, Ethan Allen Brown of Boston and J. Warrick Thomas of Cleveland.

MISSING JOURNALS

Binding of the following journals for the library is being delayed for want of the following numbers. If anyone has these and is willing to give them up he would be rendering the library a great service.

American Journal of Ophthalmology
1919 July, Dec.
1920 Oct.
1924 June
1925 Jan., Dec.
1932 Aug.-Dec.
1936 Jan., Aug.
1937 Feb.

American Journal of Psychiatry
1923 Jan.-Mar.
1926 Jan.-June
1927 Nov., Dec.
Mar.-June
1928 Mar., Apr., July, Aug.
1929 Mar., Apr., Sept., Oct.
1931 Jan., Feb., July-Dec.
1932 Jan.-Aug.
1933 July-Dec.
1934-1938, inclusive, all
1939 Jan., Feb., July-Dec.

American Journal of Obstetrics & Gynecology
1931 March
1917 all but May
1918 May-Dec.
1919 Jan.-Aug., Oct.

Archives of Internal Medicine
1940 Feb., Aug.

British Medical Journal
1940 Aug. 3, 31; Sept. 14, 21

Lancet
1930 July 5
1933 May 27
1897 Jan., Feb., Mar., Apr.
1898 Feb. 5, July 16
1899 June 24, July 1

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